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August 2009

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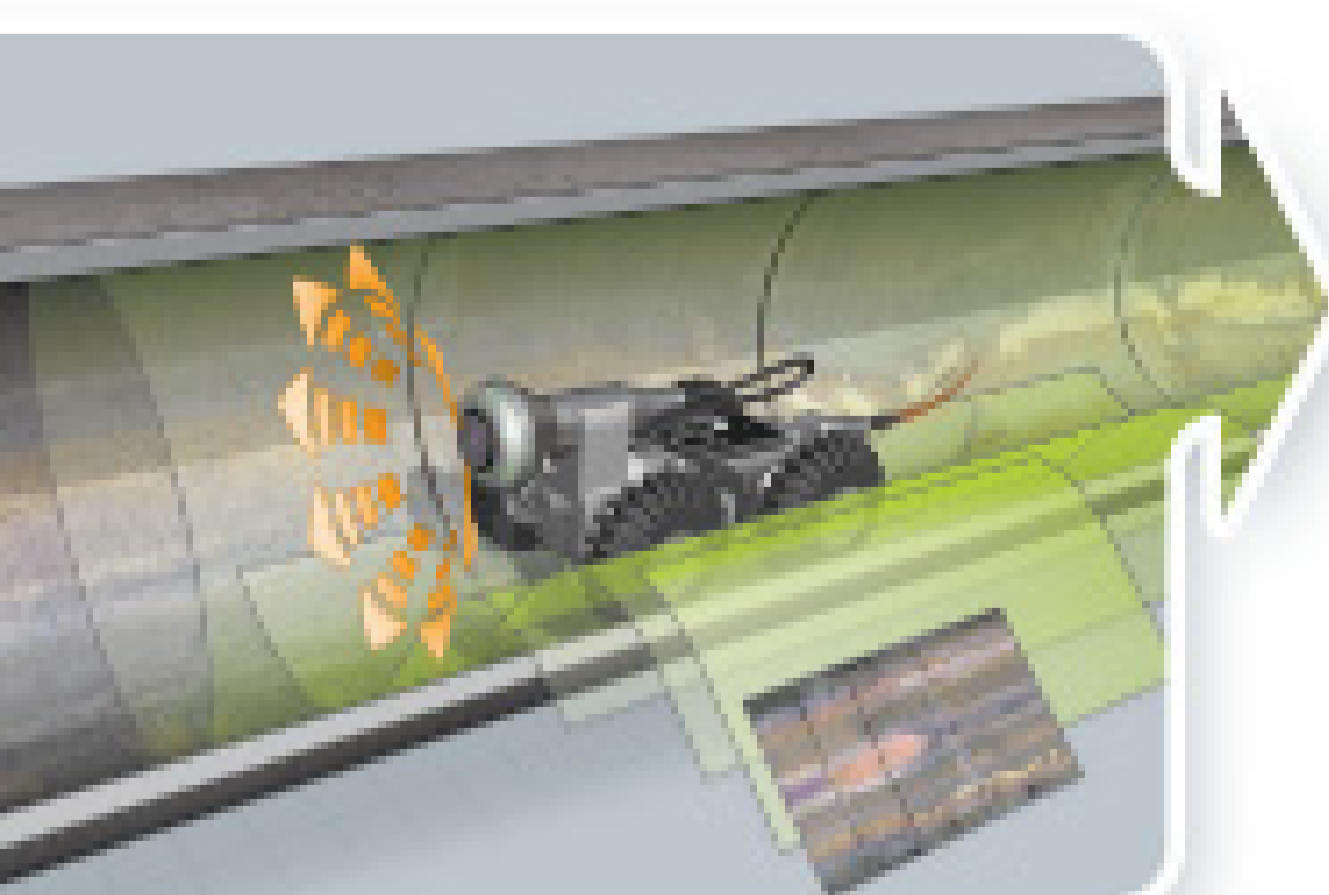
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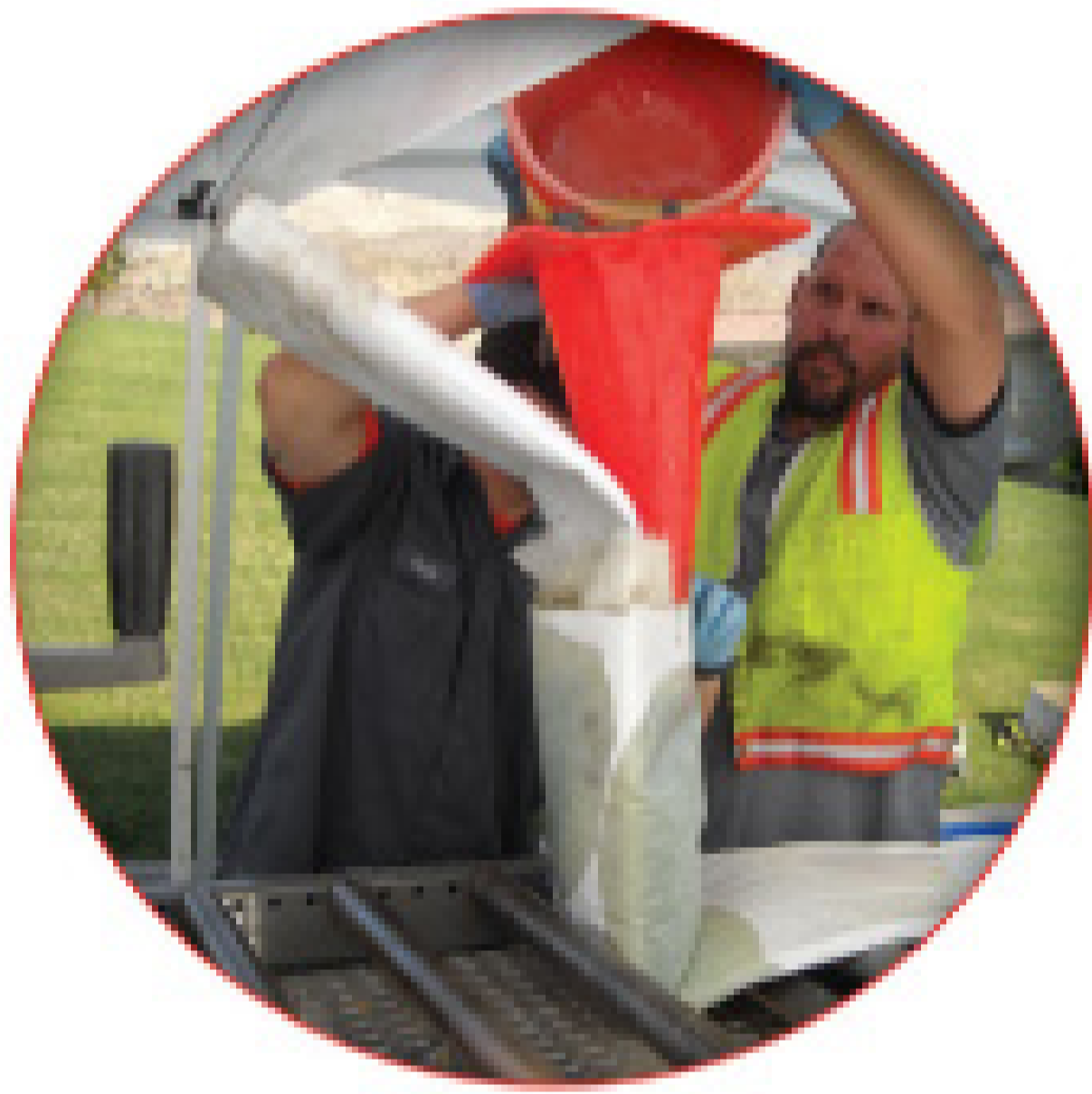
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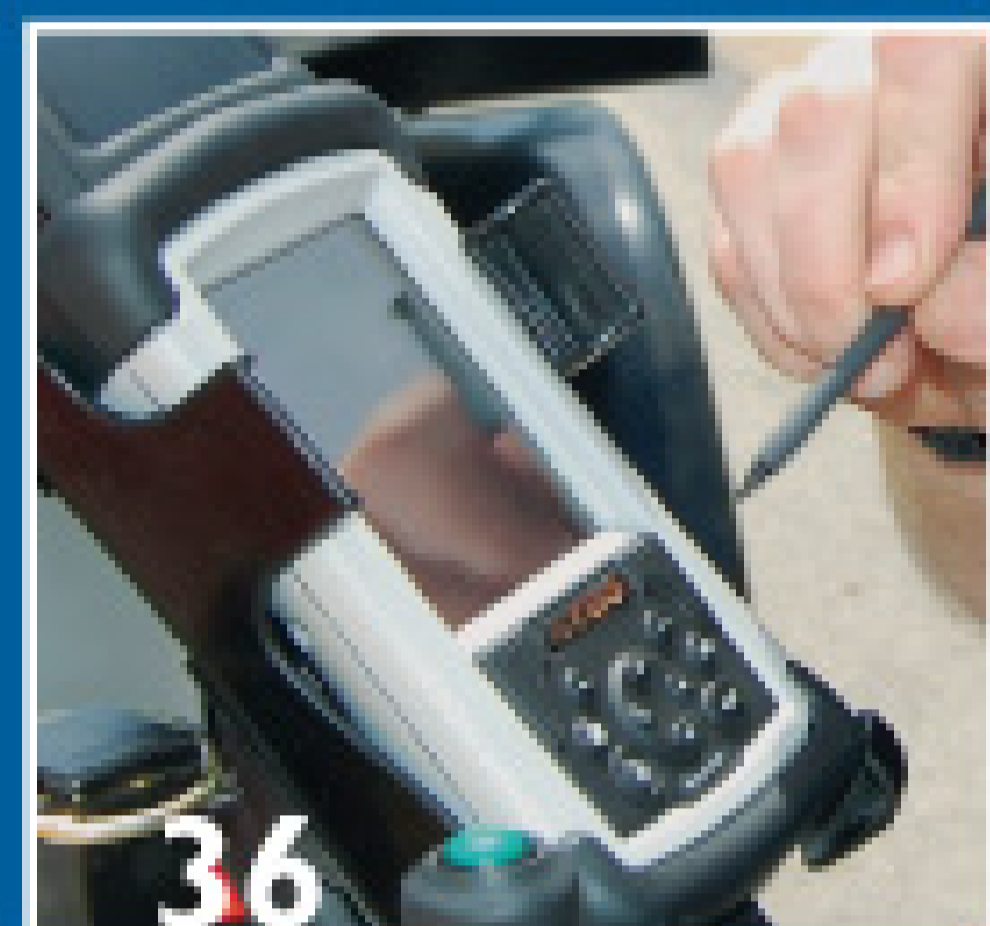
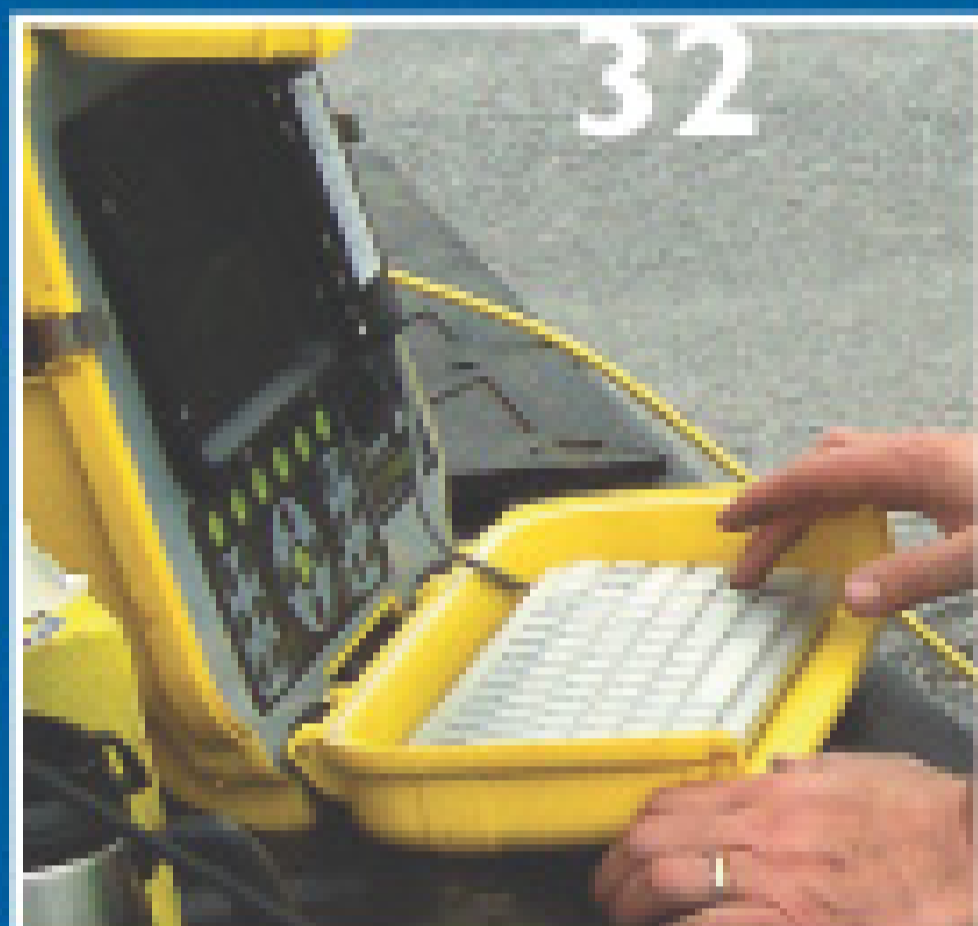
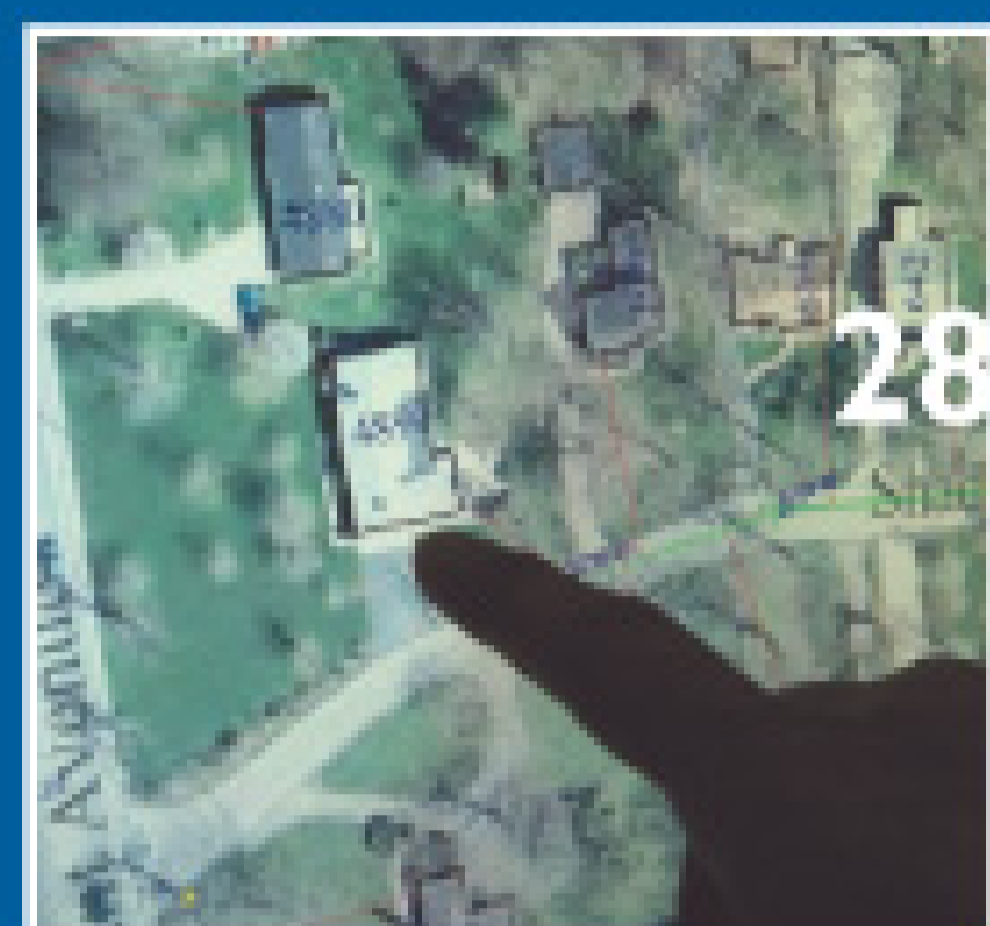
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COVER:

The City of Monroe, Mich., used the Thermopipe liner from Insituform Technologies Inc. in its water pipe rehabilitation program. Steam is used to inflate and set the liner after insertion. (Photo courtesy of Insituform Technologies Inc.)



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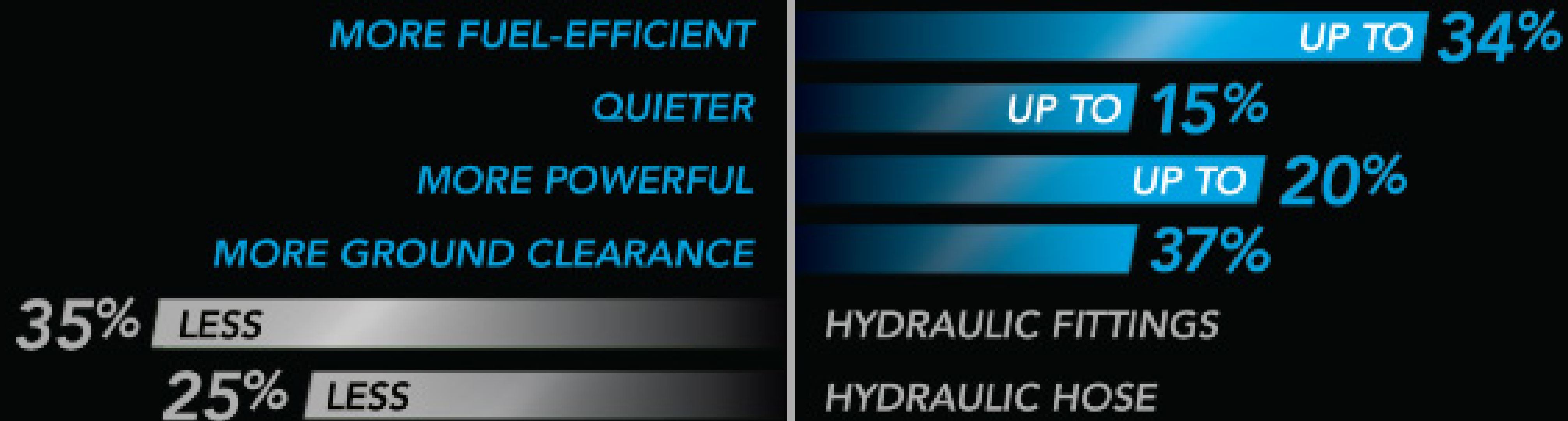
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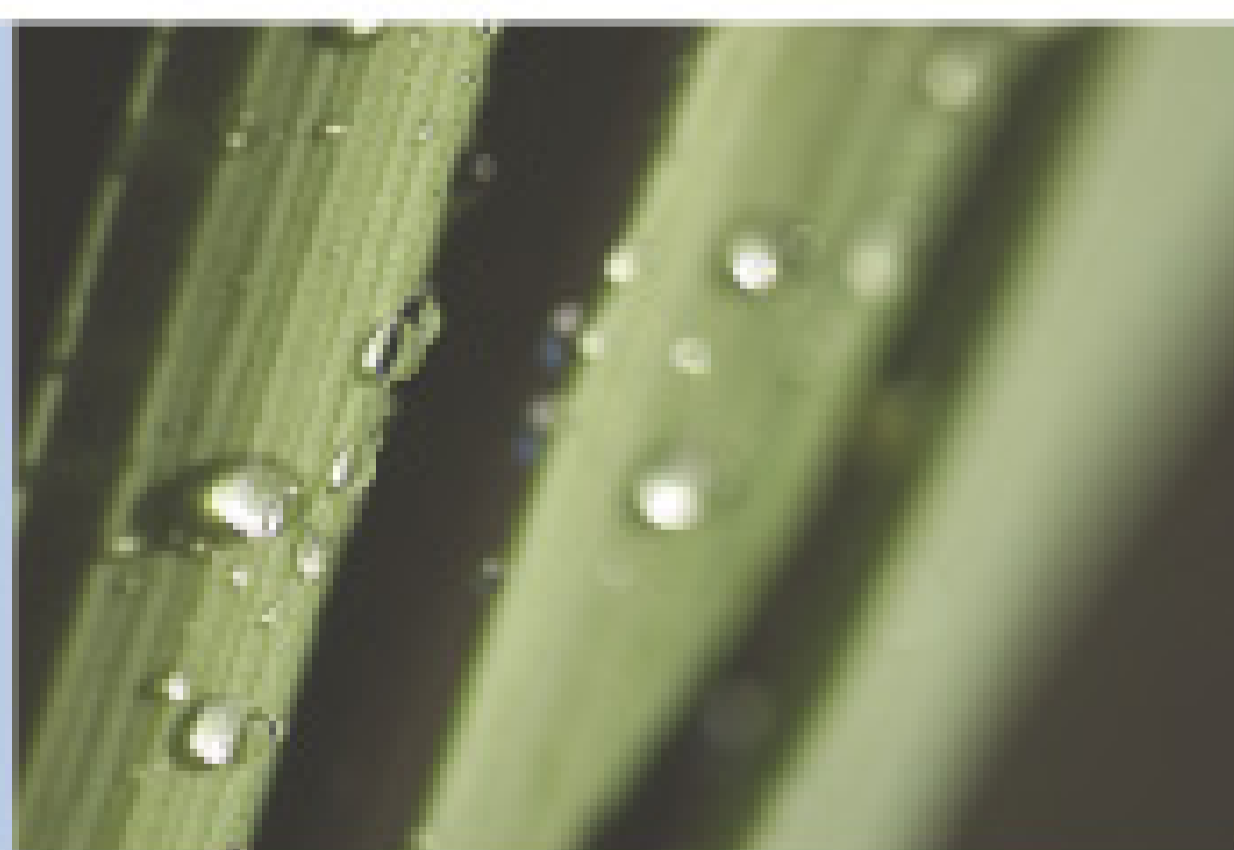
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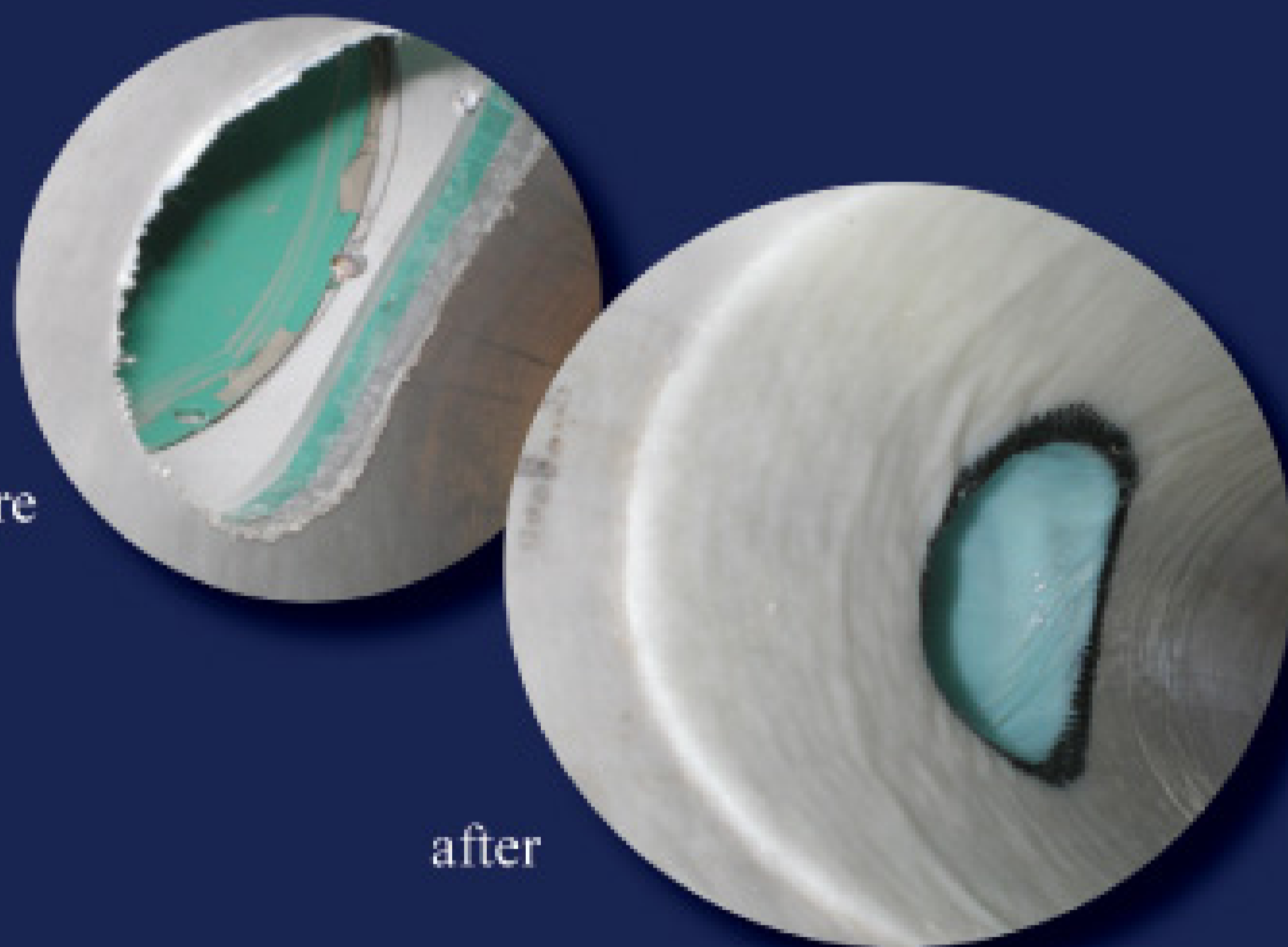
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Reprint - NASSCO Times, Spring 2009

PRESS RELEASES

Notice of Free upgrade for WinCan V8 PACP Compliant customers

Randolph, New Jersey-March 1,2009 - Recently there has been confusion in the industry concerning WinCan v8 and "PACP Compliant" modules that have been released. CD Lab is confirming that the term "compliant" is not acceptable when offering the PACP and will assure "certified" is used to promote this module immediately. Unfortunately, some WinCan v8 users have received "compliant" PACP modules that do not allow them to import/export their data freely. CD Lab wants to assure the industry that those who were sold the "compliant" module will soon be able to import/export their data freely.

Envirosight, ARIES Industries and RapidView IBAK will provide free PACP upgrades to WinCan v8 users who had purchased licenses improperly marketed as "PACP-compliant". Any license holder who paid for PACP compliant software and is missing either the observation codes or the import/export utility can contact the supplier of their choosing for this free license upgrade. Additionally, letters will be sent to each PACP license holder along with a follow up phone call to inform them of their options.

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NASSCO TIMES

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MAKING IT WORK

Public information campaigns can be highly effective in moving major initiatives forward. Here are some essentials for success.

This month's issue of *Municipal Sewer & Water* contains yet another example of a public information program that "moved the needle" on an important initiative.

The Charlotte-Mecklenburg (N.C.) Utilities WaterSmart program has helped reduce residential water consumption by 35 percent over six years. It's a multimedia program that reaches beyond pure information to include components like a showerhead swap and incentives for installing water-saving toilets.

In the public sector, information programs are often perceived as empty exercises in "image polishing" or as unaffordable luxuries. In reality, a good information campaign can bring significant financial and other benefits to a community and as such can be an extremely wise investment.

But just what constitutes a "good" information campaign? What separates a successful initiative from one that simply wastes money? Here are a few simple rules to follow, based on my research and on my own experience in the field. This isn't a complete recipe, but it can help you get your information campaign off on the right foot.

1. Be clear on what you want. Starting a journey without a clear destination is an excellent way to get nowhere. Begin with an objective that is SMART: Specific, Measurable, Attainable, Relevant and Time-bound.

An objective to "raise awareness of the importance of water conservation" fails this test. A better objective would be: "Achieve 70 percent customer awareness of our three core water-saving incentive programs within the next 18 months."

2. Take the temperature. Don't assume that you know what your public needs to understand or what will motivate them to act in the way you

desire. Talk to them and find out. Public listening sessions, a citizens' advisory committee, focus groups, appearances on radio call-in programs, a survey on your Web site — all these can help you gather information to guide your efforts.

3. Avoid the "kitchen sink" plan. Everyone loves to brainstorm ideas. And many ideas your team generates will be great. The trouble is that if you build a communication plan that contains everything including the kitchen sink, you'll lose focus, and you'll spend time, energy and funds on things you never fully implement.

Everyone loves to brainstorm ideas. And many ideas your team generates will be great. The trouble is that if you build a communication plan that contains everything including the kitchen sink, you'll lose focus, and you'll spend time, energy and funds on things you never fully implement.

A better approach is to do a few things and do them well. Select a limited number of tactics that are most likely to move you toward your SMART objective. Then throw your energy behind them to the exclusion of all else.

4. Pick your targets. An information campaign doesn't have to reach everyone equally to be effective. If you can achieve your objective by focusing in on certain segments of the public, then consider doing so.

For example, if your aim is to reduce water usage, does it make sense to target the largest commercial and industrial users? Would it be worthwhile to emphasize homes in older areas of the community that would be more likely to have older, leaky faucets and outdated, water-wasting bathroom fixtures?

5. Back the plan with an adequate staff and budget. It is great to be frugal. But being too fru-



FROM THE EDITOR

Ted J. Rulseh

gal can be expensive — because if you fund and staff your campaign so poorly that it accomplishes essentially nothing, then all the time and money you've spent is wasted (in addition to which your credibility may be shot).

Look at your plan realistically and decide how much money you will need for staffing or outside contractors, printing, advertising, travel and other predictable costs. Then make sure to allocate what you need.

If necessary, follow the process in reverse. Suppose you have no more available than \$100,000. Build the plan accordingly, and make sure the objective is realistic in light of your budget.

6. Build in a way to measure results. You started with a measurable objective. Now, how will you know if you are approaching it? If your objective is to raise public awareness to a certain level, you can measure that with a survey. If your aim is to reduce water consumption by a certain percentage, you can measure that easily (although in that case your information program may not be the only factor that "moved the needle.")

7. Believe in what you're doing. As shown by Char-Meck Utilities and others, public information programs can be powerful, and the return on investment can be high.

What's your experience with public information programs? Tell us about your successes. Drop a note to editor@mswmag.com and we'll consider telling your story in a future issue, for the benefit of your counterparts in other communities. ♦

Comments on this column or about any article in this publication may be directed to editor Ted J. Rulseh, 800/257-7222 or editor@mswmag.com.

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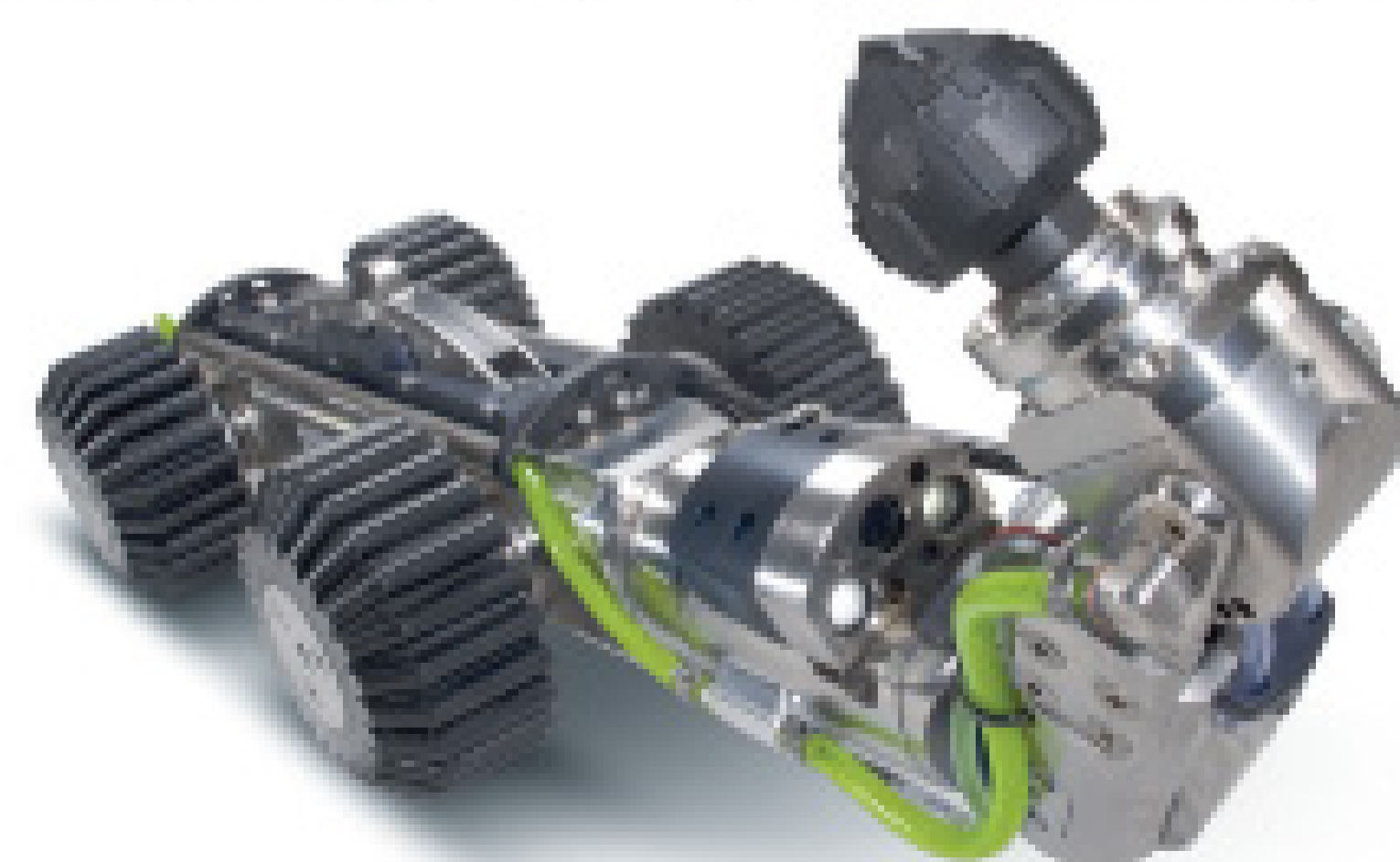


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Thermopipe liner, a polyester-reinforced polyethylene, is fed from a reel into a pit to be inserted into the host pipe. (Photos courtesy of Insituform Technologies Inc.)

FOCUS: WATER

JUMP START

A Michigan city uses a steam-cured lining system to speed up its water main rehabilitation program while reducing disruption to traffic and daily lives

By Erik Gumm

With a water system that dates back more than a century, the city of Monroe, Mich., has always had to pay attention to repair and upkeep of its cast iron mains.

But two things have come together to put the city on a much more intensive rehabilitation program. One is trenchless technology. The other is a low-interest loan program through the state and federal governments.

Together, the financing and the technology — a new steam-cured lining system — have led the city to put in place a three-year plan to replace or repair 77,000 feet of water main. That's just

under 15 miles of the 282 miles of pipe the city's water system owns.

"We've always had a strong capital improvement program," says Barry LaRoy, P.E., director of Water & Wastewater Utilities for the city. "In the past, though, the focus was on replacement. We would do less than a mile annually of replacement. In the three-year program, we're doing about 5 miles a year of rehab and replacement."

Thus, in half the time, the city will have covered nearly three times as much line as under the old program.

Aging mains

Monroe, just off of Interstate 75 halfway between Detroit and

Toledo, covers about 10.5 square miles, but the water system, which draws from Lake Erie, serves a much larger area. Much of the expansion took place in the last 15 years as the city extended service to surrounding communities. Today it serves 119 square miles, covering several townships. It also sells wholesale water to the Village of Dundee and the City of Petersburg, about 15 and 20 miles west, respectively.

The system is oldest in Monroe itself. LaRoy says the city is a member of the "cast iron club," a designation awarded by the American Cast Iron Association in the 1990s for systems with cast iron lines older than 100 years. Those lines



PROFILE:

City of Monroe, Mich., Water & Wastewater Utilities

POPULATION SERVED:
48,700

SERVICE AREA:
City of Monroe and surroundings

WATER CAPACITY:
8.0 mgd average

INFRASTRUCTURE:
282 miles of water main

ANNUAL REVENUE:
\$7.7 million

WEB SITE:
www.ci.monroe.mi.us

PLEASED WITH LINING

Besides Thermopipe liner, the City of Monroe, Mich., has added the Aqua-Pipe lining system from Sanexen Environmental Services Inc. to its list of approved manufacturers.

Barry LaRoy, director of the city's Water & Wastewater Utilities, has been so pleased with the results on 8-inch pipes that he is launching a pilot project on lining 6-inch pipes as well. "We've got a lot more 6-inch in our system than 8-inch," he says. "I'm very interested in that, because that could be quite a lot of savings."

It would also mean less disruption. "When you only have to dig every 200 to 400 feet for a valve or a hydrant, it's a big benefit compared with tearing up everything," he says. "We're being proactive in trying to renew these aging systems and do it at the least cost possible without disrupting neighborhoods and people's normal daily lives."

"Insituform's thinking is that the lining will last 50 to 75 years on its own without the host pipe, but if the host pipe gives you another 20 to 30 years on top, there's a lot to gain from that. A lot of these host pipes, surprisingly, are still in pretty good shape structurally."

Barry LaRoy

show their age. "We have on average 50 or more main breaks every year, a lot of them on cast iron lines," LaRoy says. "Eighty to 90 percent of them are in the city limits." The city has typically spent about \$700,000 per year to replace aging lines.

Pilot project

Monroe launched its latest program with a pilot project at the request of a major industrial customer. The factory had an old fire protection system that the owners wanted to remove. But until the city could give assurances that it could provide adequate water to the area under the proper pressure, fire protection authorities wouldn't let the factory shut down the system. Complaints of rusty, unpalatable water were common, too.

"We did a leak detection survey for that area," LaRoy recalls. "We

found a few main breaks underground that weren't providing any evidence at the surface. So we made those repairs. We found some closed valves and opened those. That helped a little bit."

But it wasn't enough: "The fire marshal would not allow them to get rid of their fire protection system because we couldn't provide them adequate fire flow." The next step was to take that part of the system out of service and clean the main thoroughly. That improved flow significantly, but water-quality issues persisted.

That's when LaRoy learned about Thermopipe liner from Insituform Technologies Inc. The city was a past customer, having the company's sewer pipe-lining products, and LaRoy was intrigued by the Thermopipe liner methodology.

Unlike other pipe liners, Thermopipe liner doesn't adhere to the inside of the pipe — instead it simply rests free inside. LaRoy liked the fact that the heat-cured liner didn't have to rely on the integrity of the host pipe over the long term. "I was looking for a solution that would be a structural liner," he says. "So if the host pipe ever does give way, it could be a full replacement and provide another 50 to 75 years of service life."

First in the state

Monroe was the first municipality in Michigan to win approval from the state Department of Environmental Quality to use Thermo-



Thermopipe lining has helped the City of Monroe accelerate its water main rehabilitation program.

pipe liner. In the spring of 2007, the city conducted a pilot project on a 1,900-foot stretch of main serving the industrial customer. "The results were very positive," LaRoy says. "The water-quality and low-pressure issues went away."

The positive experience led the city to launch its much more ambitious project, which began in 2008. It consists of 14,000 feet of lining and another 13,000 feet of main to be replaced. The lining/replacement program is normally budgeted at \$800,000 to \$900,000 annually, but because the three-year project covers so much more line, it will cost about five

times that amount each year.

The first year was city-funded, but for the second year, Monroe applied for and will receive a low-interest loan of about \$5 million from the Drinking Water Revolving Loan Fund. The EPA provided seed money, and the state DEQ matched it.

The second-year program will consist of 7,000 feet of lining and 17,700 feet of replacement. Year three will cover 11,600 feet of lining and 13,700 feet of replacement. Monroe will seek a loan for that project, as well.

City staff drew up a comprehensive plan for all three years,

segmented from year to year. Projects are coordinated with road resurfacing and reconstruction to reduce disruption to traffic and business. If needed, sanitary sewer lines can be replaced or repaired at the same time.

Going small

Replacement projects are aimed at smaller mains. "We have a lot of 4-inch cast iron mains," LaRoy says. "With the tuberculation buildup in these mains, you're talking about a 2-inch or less water main. When they were designed back in the late 1800s and early 1900s, they met the requirements for the time. But now,

A section of liner is shown inflated. The city focuses its lining program on 8-inch cast iron pipes in areas with a history of rusty water complaints, low pressure, and low fire flow.

tomers' outside faucets and fed from a fire hydrant with a backflow prevention system. After disinfection, the bypass system is turned on and the regular system's curb stops are turned off. Customers get their water free during the renovation and only pay quarterly service charges.

Access pits 8 to 9 feet long and 5 to 6 feet deep are dug at every valve point, fire hydrant and inter-

"If you can line a water main that's in the roadway and only have to dig every couple hundred feet versus tearing up the whole roadway, it's a lot faster and it's less disruptive to the customer. That's a big plus for an urban environment."

Barry LaRoy

when we have fire demands in the 2,500-gpm range for industrial parks and a minimum of 1,000 gpm for residential areas, it just doesn't meet the fire code. You've got to upsize them."

The city's replacement specifications call for ductile iron class 52 pipe for mains in the roadway, fastened with stainless steel bolts and poly-wrapped to prevent corrosion. Water mains outside the roadway area call for PVC C900 or C909.

For the lining projects, the city focuses on 8-inch cast iron sections with a history of rusty water complaints, low pressure and low fire flow. Along with lining, the city is replacing hydrants and valves and replacing lead service lines with copper.

"Insituform's thinking is that the lining will last 50 to 75 years on its own without the host pipe, but if the host pipe gives you another 20 to 30 years on top, there's a lot to gain from that," LaRoy says. "A lot of these host pipes, surprisingly, are still in pretty good shape structurally."

The lining process

In the lining process, a pipe segment is taken out of service and a temporary bypass system with a minimum of 2-inch HDPE pipe is then put in place, attached to cus-

tomers' outside faucets and fed from a fire hydrant with a backflow prevention system. After disinfection, the bypass system is turned on and the regular system's curb stops are turned off. Customers get their water free during the renovation and only pay quarterly service charges.

Crews grind down the water service corporations inside the main so they are flush with the inside of the pipe wall. "You don't want those corporations sticking out," LaRoy explains. "Then it could rub on the liner and break it."

The liner itself is polyester-reinforced polyethylene matrix. Available in diameters from 2.75 to 12 inches, it has an internal pressure rating of 170 psi (230 psi for 4- through 8-inch diameters). Wall thickness ranges from 0.08 inch to 0.20 inch.

The liner comes from the factory flattened and folded lengthwise like an inverted letter C and wound on a reel. At installation, it is winched into the cleaned host pipe from the reel and pulled through. Then it is inflated with air into a full cylinder and heated with steam, which supplies heat and pressure to remove all creases from the folding and fits it tightly to the host pipe. End couplers and service connection ferrules are attached after a short cool-down period. "The lining process takes maybe 20 minutes," LaRoy says.

City specifications require a



pressure test. Afterward, services are internally tapped in using an iTap robotic reinstatement cutter. The system uses stainless steel, self-tapping T-nuts and gaskets to seal the liner against the host pipe, locking it down to keep water from seeping around the nut. Disinfection follows, and then service is reinstated to customers. External taps are necessary on larger services.

Good for the city

How long it takes to do a segment depends on how many services it includes and the location of the installation. About 150 feet of lining per day is average. Crews finished one 2,000-foot length with only a few services in about two weeks.

But other complications can occur. A segment of 12-inch line under Interstate 75 that was only 700 feet long took 10 days because

of the location, while another 3,500-foot section elsewhere took 12 days — almost 300 feet per day.

"I really like the lining technology," LaRoy says. "If you can line a water main that's in the roadway and only have to dig every couple hundred feet versus tearing up the whole roadway, it's a lot faster and it's less disruptive to the customer. That's a big plus for an urban environment." ♦

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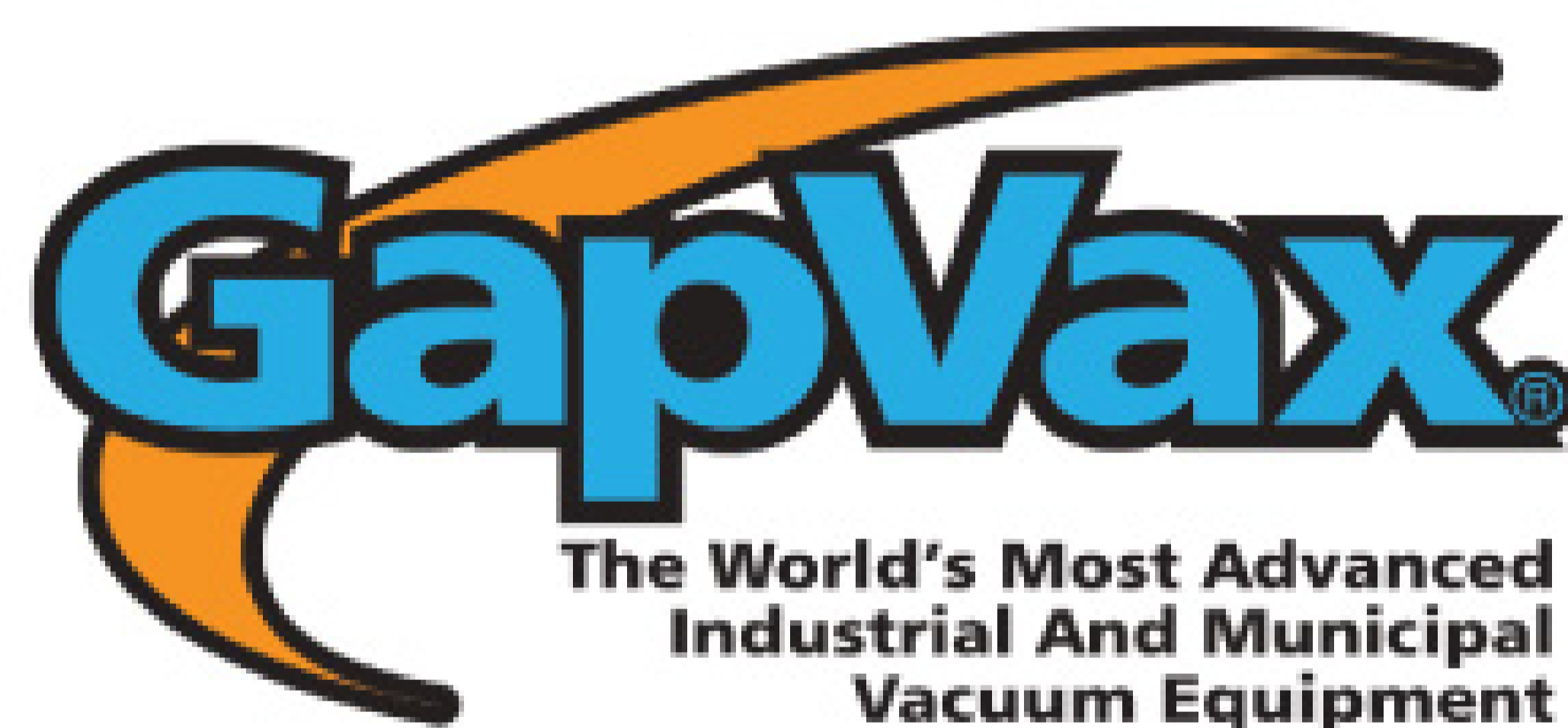
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GAINING GROUND

Chemical foam root treatments and a repair-and-replace program for vitrified clay pipe help a Pennsylvania city protect its sewer infrastructure and its budget

By Peter Kenter

The city of Mt. Lebanon, Pa., has a verdant landscape of tree-lined streets. But lush growth on top means deep root growth below the soil, and older clay sewer lines are coming under attack.

A consistent and assertive program of annual chemical foam root-control treatments over the past decade has helped the city tame its root problem to manageable proportions, as the worst lines are repaired and replaced. As a smaller community (population 33,000), the city finds that farming out the service to specialized contractors helps keep it affordable and on budget.

Attacking the culprit

In 1850, the Rev. Joseph Clokey imported two Cedar of Lebanon trees from Palestine and planted them in front of his house, giving the town of Mt. Lebanon its name. More than 150 years later, the municipality still values its trees, although the city, less than 10 miles south of Pittsburgh, continues to battle invasive roots.

"Although we use a lot of CCTV inspection in the system, you often don't need to see the video to know you have a root problem," says Rudy Sukal, Mt. Lebanon public works superintendent. "We're part of the Tree City U.S.A. program run by the Arbor Day Foundation. Our own forestry crews maintain about 10,000 municipal trees lining our streets between the sewer and the sidewalk, in very close proximity to the sewers. Probably the biggest problem tree is the silver maple."

Dave Wall, left, and Josh Amo (center) of Duke's Root Control Inc., discuss the day's root treatment plans with Rick Virgi of the Mt. Lebanon Public Works Department. (Photography by J. Monroe Butler II)

PROFILE:
City of
Mt. Lebanon, Pa.

INCORPORATED:
1912

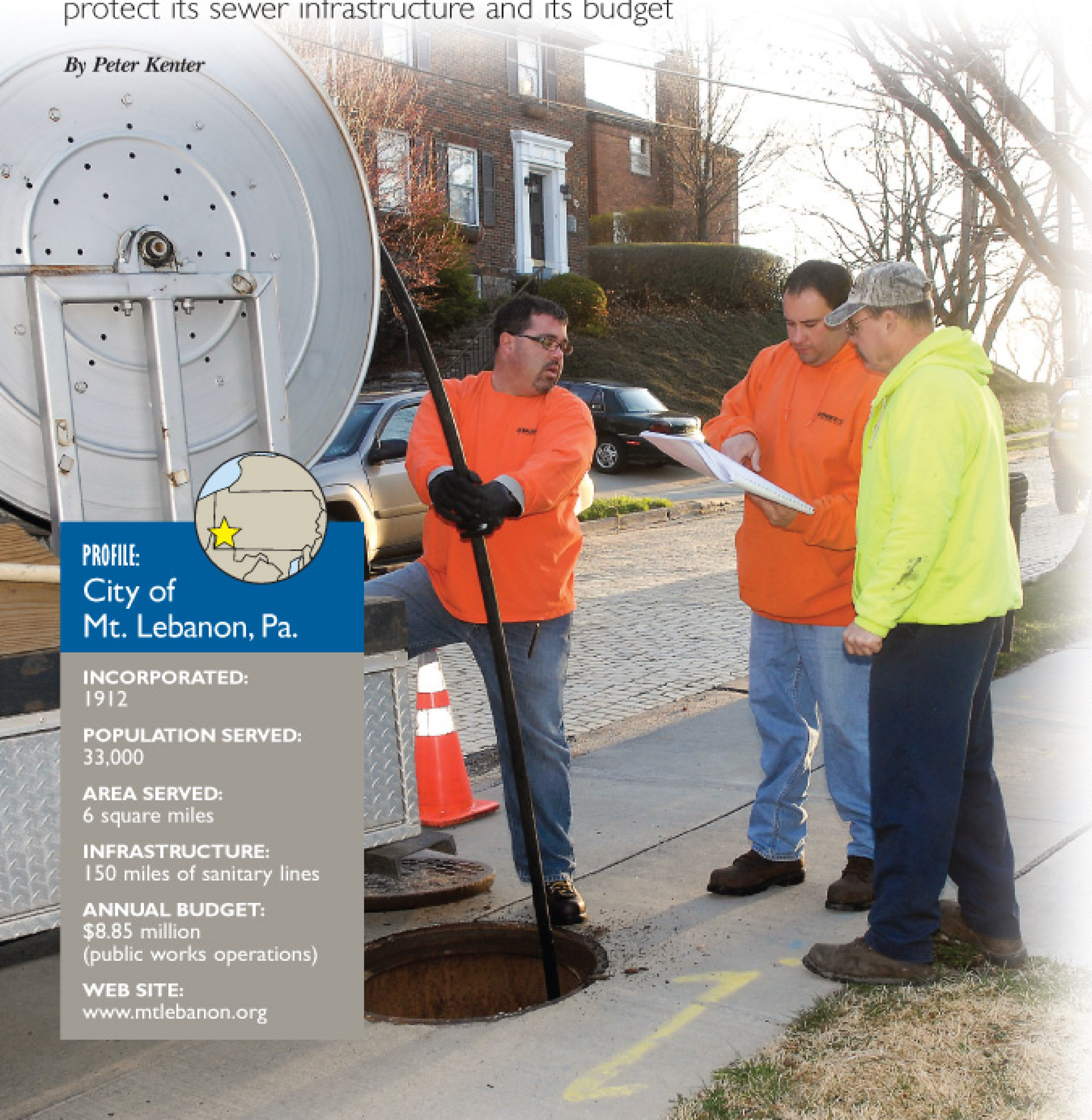
POPULATION SERVED:
33,000

AREA SERVED:
6 square miles

INFRASTRUCTURE:
150 miles of sanitary lines

ANNUAL BUDGET:
\$8.85 million
(public works operations)

WEB SITE:
www.mtlebanon.org





Left photo: Dave Wall (left) and Josh Amo of Duke's Root Control prepare for a root treatment in a Mt. Lebanon sewer, as public works staff member Rick Virgi observes. Lower photo: A mixture of diquat and corn foam is applied to kill roots and prevent growth.



“Although we use a lot of CCTV inspection in the system, you often don’t need to see the video to know you have a root problem. We’re part of the Tree City U.S.A. program run by the Arbor Day Foundation. ... Probably the biggest problem tree is the silver maple.”

Rudy Sukal

While some of the city’s sewer lines are made of PVC, about 95 percent are made of vitrified clay with a joint every 3 feet. That’s the type of environment tree roots are quick to exploit.

More than 10 years ago, the city used a regular program of root cutting with its own high-pressure water jetter, manufactured by Aquatech (a part of Hi-Vac Corp.).

“The roots were starting to become a chronic problem,” says Sukal. “We were clearing roots from some trouble spots up to twice a year.

“The more we did to cut and control the roots, the more they seemed to grow back thicker and stronger. The roots were starting to degrade the sewer lines, and the high-powered hydraulic jetters were further damaging the weak-

ened clay pipe. We were starting to wonder if our own root-control program was going to cause the pipes to collapse structurally.”

Putting out a contract

Sukal and his staff found they were devoting excessive staff resources to root control. “With a three- or four-person crew on root control, one of our biggest con-

cerns was trying to find a way to reduce or eliminate the manpower we were expending on dealing with roots and putting those people to work elsewhere,” he says.

“We didn’t want to invest a lot of capital in equipment like tanks and foam generators that we couldn’t make a lot of use of. It simply wouldn’t have been a wise investment for a department our

KEEPING THE PUBLIC INFORMED



Rudy Sukal

Communication is an important component of the chemical root-control program in Mt. Lebanon, Pa. Before a chemical root treatment in their area, residents are informed that contractors will be working to remove roots that could block their sewers. A GIS map on the city’s Web site lets residents see which areas will be treated.

“There’s sometimes a bit of concern about the treatments from some residents,” says Rudy Sukal, public works superintendent. “Some people aren’t so fond of [herbicides], so we want to make sure they understand what we’re doing.”

A blog published by one citizen warns residents that the foam could enter water lines and that mysterious fluids had been seen around manhole covers after treatments. Sukal notes that manhole covers occasionally drip condensa-

tion from their undersides immediately after removal.

“We always have an inspector there to ensure that the foam is applied to specifications and stays inside the sewer line,” Sukal says. “It’s clearly impossible for the chemical to enter a pressurized water pipe.”

Forty-eight hours before treatment, a flier is delivered to any home connected to the main sanitary line being treated. The notices explain that the product is approved for aquatic use by both the U.S. EPA and the Pennsylvania Department of Agriculture, and that a certified pesticide applicator and a city public works inspector are on the site at all times. It also offers 24-hour emergency contact numbers.

“If they have any questions about the program, my name and office phone number are on the notice, and I’m happy to take their calls,” says Sukal. “I also take a few calls from people who know exactly what’s going on, and ask us to treat their laterals with the herbicide foam. I have to let them down easy.”

size. We would also need to get a state license to apply pesticide, and while our crews are capable, we would need to get pesticide training for our staff for just one application per year. From the beginning, we decided to contract out our chemical root control."

The Public Works Department devised a pilot program in 2000-2001, identifying several particularly troublesome sewer segments. "These were areas with shallow pipes close to trees," says Sukal. "Our television contractor had also noted these lines were a problem, and we had them identified as part of what we called our 'periodic checklist.'"

The city chose Duke's Root Control Inc. of Syracuse, N.Y., to apply the herbicide diquat dibromide under the trade name Razorooter II, a U.S. EPA-registered product applied manhole-to-manhole in root-infested lines.

The product is registered for aquatic use and as an algacide in ponds, so it adds no extra burden to wastewater treatment. It is applied as a foam created in a

foam-generating tank that temporarily fills the sewer line. The foam affects only the roots that are exposed to the product, destroying up to a foot of the root length outside the line.

Tree remains healthy

"The rest of the tree remains healthy," says Sukal. "We haven't lost a tree yet. The product kills the root pretty much on contact, but it takes awhile to see results — some-

"We didn't want to invest a lot of capital in equipment like tanks and foam generators that we couldn't make a lot of use of. ... We would also need to get a state license to apply pesticide. ... From the beginning, we decided to contract out our chemical root control."

Rudy Sukal

times a couple of weeks or months.

"We inspected the pipe with CCTV to see what the results were, and we could see the roots softening and sloughing off. Roots that were once white and crispy stop growing and turn black and slimy. We also wanted to make sure the

marshy root material didn't give the wastewater treatment system any trouble. With good results, we went ahead with a more ambitious plan to treat all of the root-infested areas in the sewer lines."

Mt. Lebanon opens the job up for bidding each year, targeting 10,000 to 35,000 linear feet of pipe annually, where crews have identified the worst root incursion. Duke's Root Control won the contract eight of the last nine years.

The application works best in warmer weather. The 2009 contract, which spans March and April, involves 30,000 linear feet of treatment at a total cost of around \$40,000.

Crews use foam applicators inserted at the manhole, while a public works inspector accompanies them to observe the process. "They typically treat about 4,000 linear feet a day, with an eight-hour day," says Sukal.

Repeated application

Roots will eventually return if ignored, so the city repeats the treatments in the same problem areas every two to three years. Sukal says the product's warranty structure encourages continued use. Each application is guaranteed for two years, so if roots return during that time, they are

treated at no added cost.

Concurrent with the root-treatment program, the city is repairing and replacing the worst of its sewer lines. Some lines are being replaced by polyvinyl chloride (PVC) pipe or repaired, manhole-to-manhole, using structural cured-in-place pipe (CIPP) liners.

That process was accelerated by a consent order issued by the Allegheny County Health Department in 2003 to bring 61 county communities into compliance with the Clean Water Act. The order required the communities to inspect and map their systems by 2007. Mt. Lebanon must televise its sewer system by May 2010, and major repairs must be completed by November 2010. The inspection phase is already underway.

"We're required to repair any major defects we find within six months of detecting them," says Sukal. "Wherever we've placed PVC or inserted CIPP liners, the root problem is over. As we complete the mandated CCTV inspection, we're keeping careful track of any problems related to roots. The evidence shows we're definitely gaining on them." ♦

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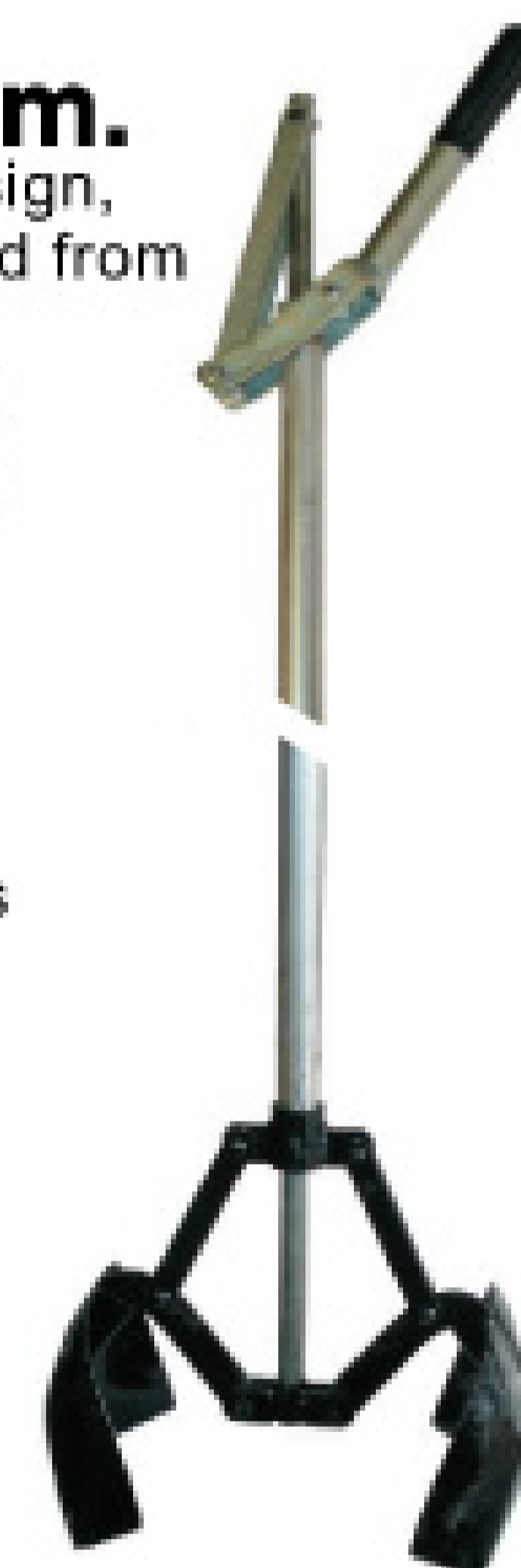
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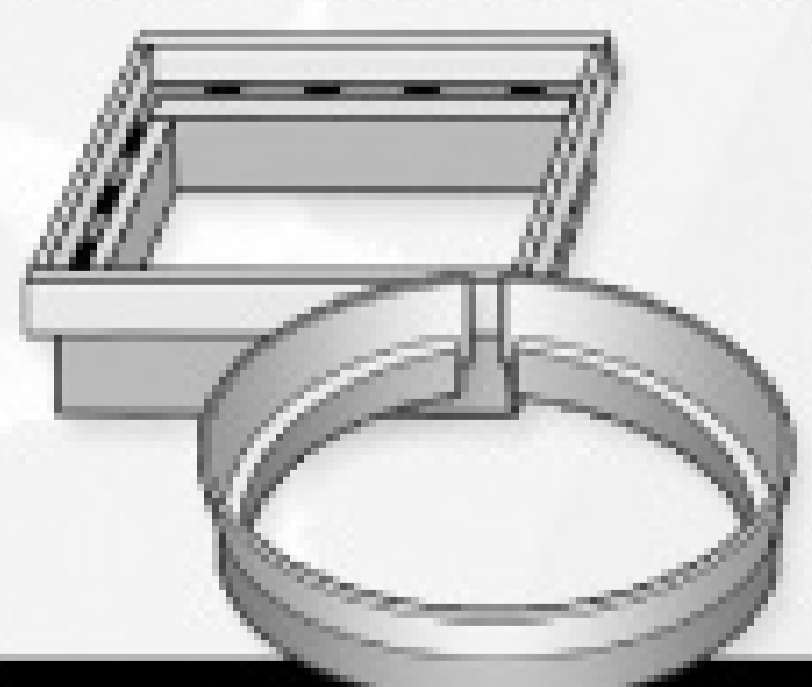
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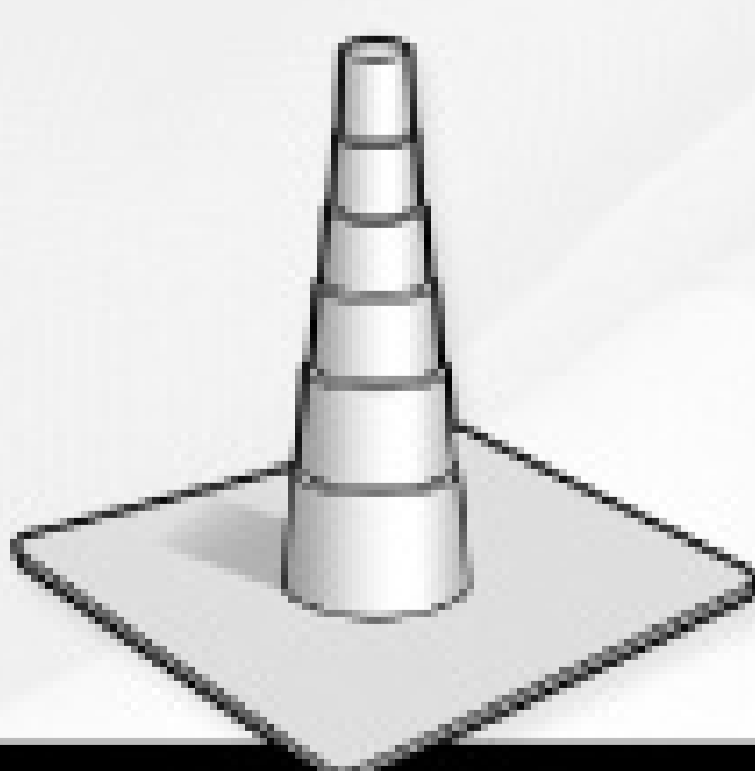
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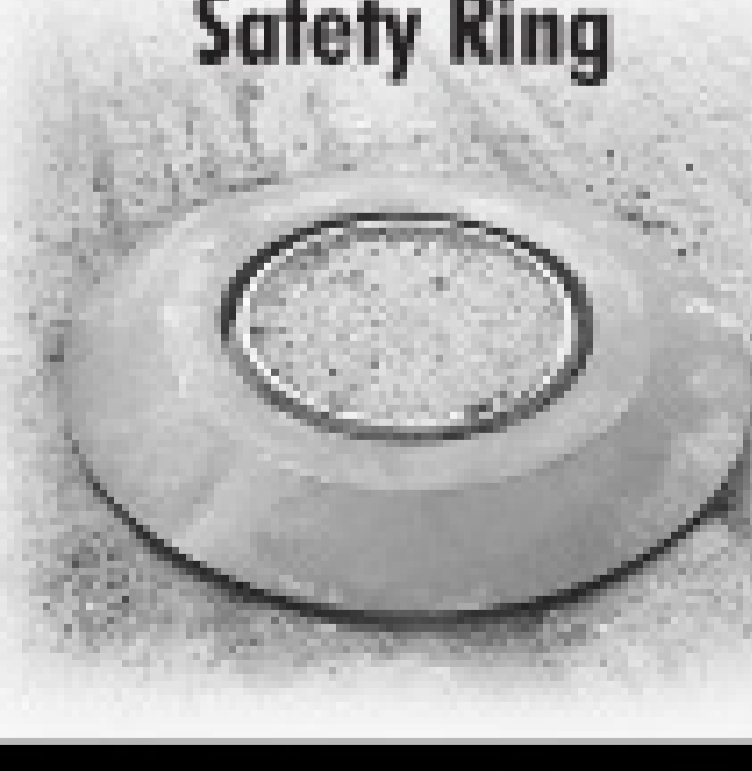
I.D. Utility Locator



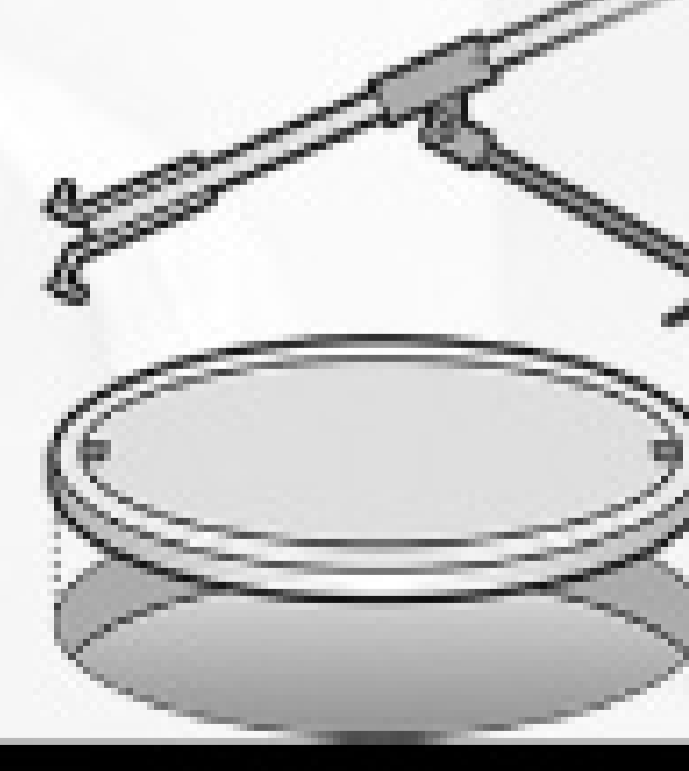
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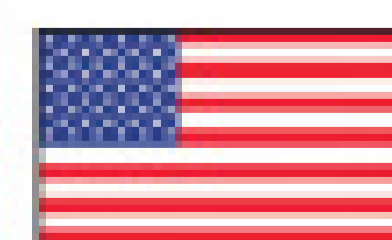
The Pathfinder is designed and manufactured in the U.S.A. by Aries Industries, Inc. The high resolution camera module and high intensity LED lighting let you see details that other cameras miss. The brushless drive motors and electronic clutches in the tractor yield longer life, less maintenance and maximum power in a minimum size for optimal productivity. The standard back-up camera with LED lighting helps negotiate bends in the pipe while retrieving system. The Pathfinder is designed and built with the Aries performance and durability that you deserve and have come to expect.

Zoom Pole Camera

Aries high resolution camera module used in conjunction with the 432:1 zoom ratio and High intensity detachable LED lightheads, allows you see details that other cameras miss. The wireless operation makes the system extremely versatile and allows you to take it anywhere and transmit the video anywhere. When this system is used with the optional media case with 10" day light readable screen, it allows the user to inspect any pipe anywhere you can get to. For more versatility virtually any reporting software can be added to greater enhance the systems capabilities.



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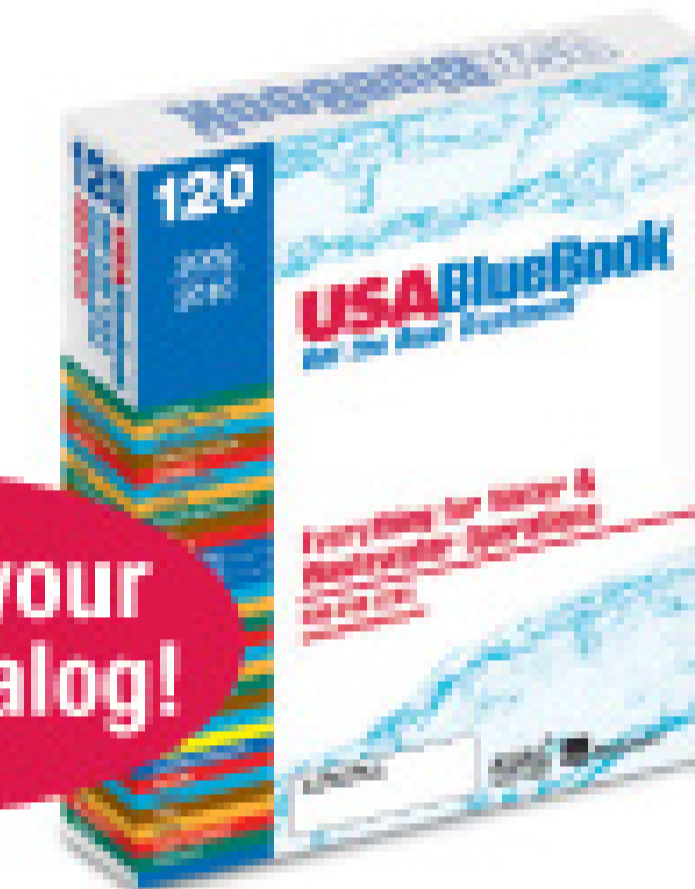
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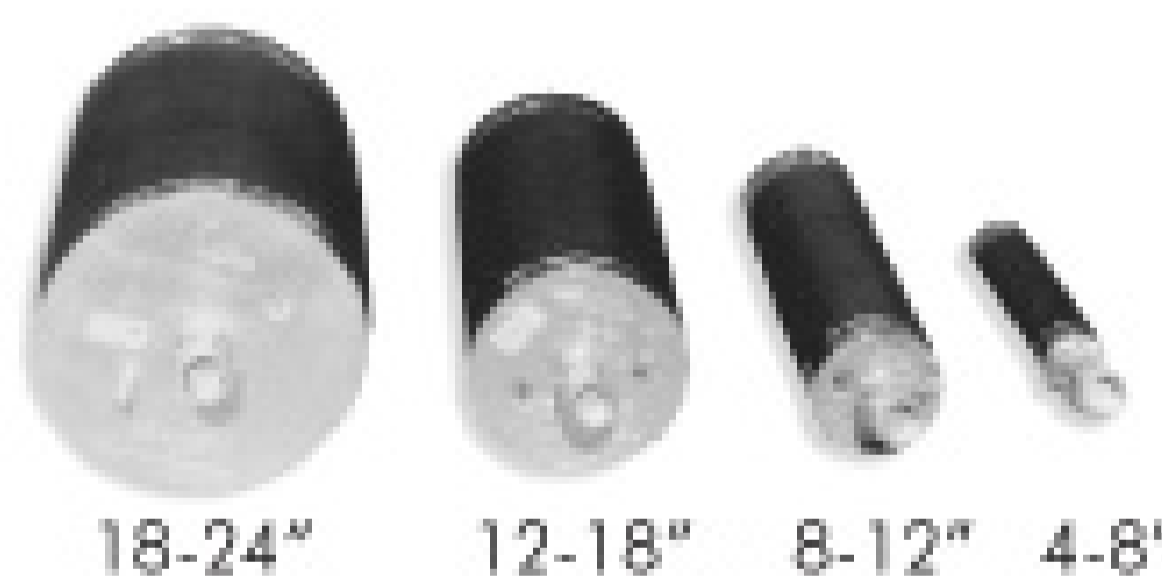
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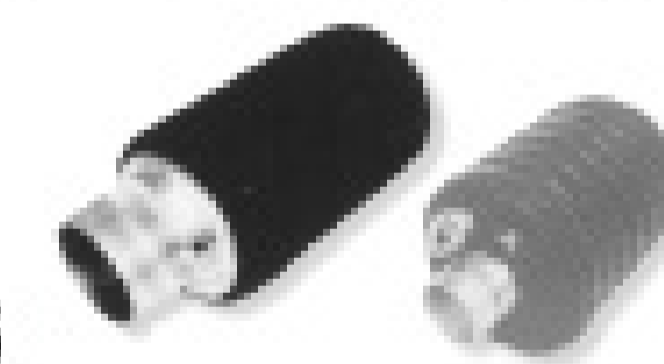
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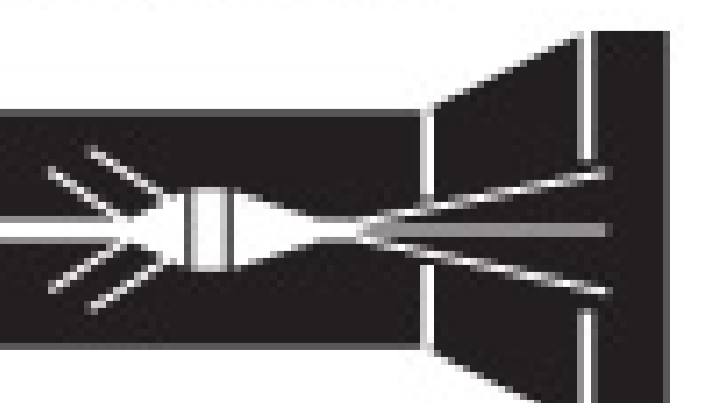
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FOCUS: SEWER

ROOTING FOR THE FUTURE

The City of Fairfield (Ohio) takes a proactive approach to blockages and employs long-term strategies to ensure lasting system performance

By Angus W. Stocking, L.S.

What does a city wastewater department do when there are no crises to address?

"The city council is focused on quality of life," says Dave Crouch, public utilities director in Fairfield, Ohio, a city of 43,000.

"That's reflected in our public utilities," he says. "Fairfield has some of the lowest rates for municipal services in southwest Ohio, and we want to keep providing good service for a reasonable rate for generations."

For Fairfield, that means a sound operating budget, judicious investment in maintenance programs like root control, and a long-range view that includes planning for projected growth.

That kind of thinking contributes more than just efficient waste collection. "We're contributing to the life of the community," says Drew Young, superintendent of public utilities. "We think about things like blighted properties,

which tear down neighborhoods and can be a result of poor infrastructure decisions. With good infrastructure, and by helping people with private line issues, we're actually helping Fairfield to thrive."

Focus on maintenance

Fairfield has a strong industrial base, but no producers of highly toxic waste, Crouch observes. Most sewer lines were laid in glacial silt, a non-aggressive soil that doesn't attack the pipes. Thanks to an aggressive pipe-lining program that started in the 1980s, the city has virtually no pipes in critical condition.

The city's wastewater collection system includes 175 miles of 8- to 48-inch sewer line (mostly concrete with some vitreous clay) and 4,600 manholes. The lines are all also fairly new. "Our collection agency is only about 54 years old," says Crouch. "Our sewer infrastructure didn't even include a treatment plant until 1967. The majority of our system is 30 to 40 years



City of Fairfield maintenance operator Kim Campbell, left, and collection laborer Chris Croucher add RootX root treatment to a sewer line. The material, which foams on contact with water, is designed to kill roots in municipal and residential lines. (Photography by Carrie Cochran)

old, but lots of it is just 10 to 15 years old."

So the challenge is not repair but to maintain. "How do we sustain continuity of service for a long time?" Crouch says. "We're looking at a city that is nearing build-out, and with only 300 to 400 new homes projected, and less than 1,000 acres of industrial growth area, we're not going to have a lot of new development money coming in.

"So, how can we be sure that we're still going to provide the



PROFILE:
City of Fairfield,
Ohio

FOUNDED:
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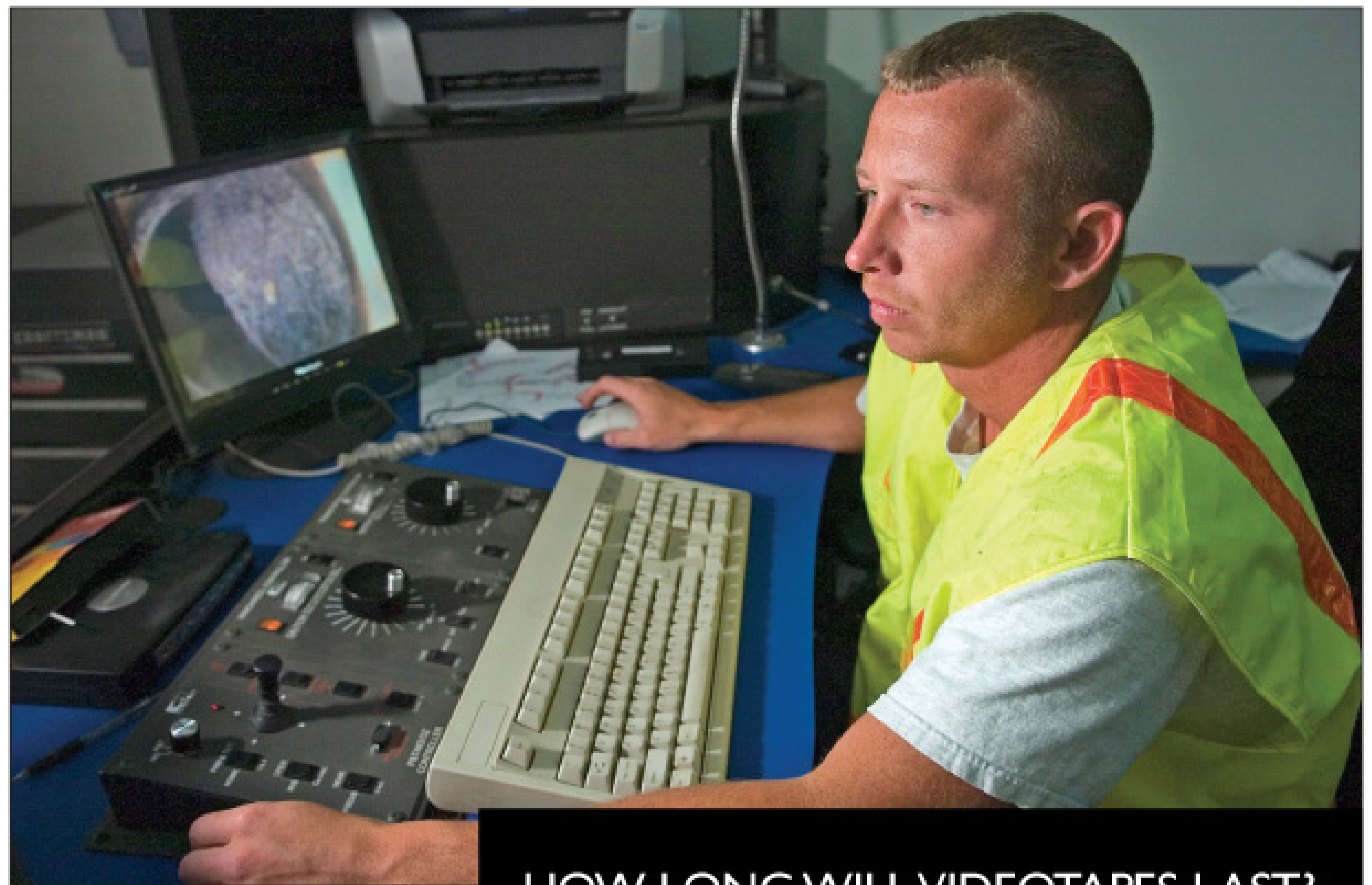
POPULATION:
42,097

AREA:
21 square miles

INFRASTRUCTURE:
175 miles sanitary sewer,
4,600 manholes

ANNUAL BUDGET:
\$3.2 million
(wastewater operations)

WEB SITE:
www.fairfield-city.org



Top left: A map generated by Geomedia GIS software in the city TV truck shows a neighborhood in which a crew is doing root control work. Bottom left: A foaming pipeline root control formulation kills roots in the City of Fairfield's sewers. Right: Assistant foreman Jason Turner controls a remote camera as he views live video of sewer lines from the TV truck.

“In Fairfield, the homeowner is required to maintain the system, so what we do when we see issues is make a print of the screen showing the problem or potential problem. We can do that right in the truck, using Granite XP software from CUES and a regular printer, and give it to the homeowner right then, along with a form letter.”

Drew Young

same level of service in 50 years? We want our capital investments to be truly needed. We need to plan our upgrades, and we need to maintain assets consistently.”

Attacking roots

With relatively few issues to consider, root control has been an area of interest. The city fights the battle on two fronts: reactively, by cutting and cleaning in response to blockages and complaints, and proactively, by systematically relining problem areas with HDPE pipe and using chemical foams to stop invasive root growth.

“You’re always going to need to do some cutting, because you’ll always need to clean in a hurry when things get blocked, unless you

want houses full of sewage,” says collection foreman Jeff Zimmerman.

Young adds, “Even though we inspect every five years or so, we don’t see the pipes often enough to head off everything. A lot can happen in a five-year window.” Crouch points out that grease and broken-off roots can cause unpredictable blockages well downstream from the source of the problems.

Of course, some root issues are generated from private lines. “I’d say 20 percent of the time we’re cutting out roots that have broken off from within private lines,” says Young. “If you think about it, we have 175 miles of line that we maintain, but we also have about 156 miles of private 6-inch lateral. That’s

HOW LONG WILL VIDEOTAPES LAST?

According to the National Film and Sound Archives of Australia, videotapes can deteriorate in as little as three years if stored in poor conditions. In good conditions, the upper limit is not known, but the Archives has had tapes in storage for more than 30 years, and they are still playable.

Another factor to consider is the life of the playback equipment. Will a working VCR still be available in 30 years? Heat and humidity are the greatest enemies of videotape, according to the Archives. The recommended storage conditions for videotape are 18 to 24 degrees C with relative humidity between 35 and 45 percent.

Users of videotapes should avoid storing them on concrete floors, in attics or basements, and next to boilers, bathrooms or other sources of humidity.

about 40 percent of our system.”

And it might be the most problematic 40 percent. The point of connection between private and city lines is often a source of root intrusion. Homeowners often plant maples, which, according to Young, “seem to hunt out water like a willow.”

Long-term strategy

Still, cutting roots every four to six months was deemed unacceptable, and the department embarked on an asset management program aimed at long-term reduction of root issues. To cut down on root problems arising from private lines, Fairfield employs several strategies.

One important technique is to get a look at the laterals and share the insight with homeowners. The city’s newest TV truck is equipped with a lateral launcher, the LAMP system from CUES Inc.

“It can actually send a camera 75 feet up a lateral, which is really cool,” says Young. “In Fairfield, the homeowner is required to maintain the system, so what we do when we see issues is make a print of the screen showing the problem or potential problem. We can do that right in the truck, using Granite XP software from CUES and a regular printer, and give it to the homeowner right then, along with a form letter.”

Alerting homeowners to poten-

tial problems helps reduce blockages and middle-of-the-night phone calls. To further help residents, the city Web site gives specific advice about chemical root control, including suggestions to avoid copper sulfate or metam sodium, and

One motivation for lining is to avoid disrupting neighborhoods. "We like to keep people happy," says Young. "When we line, not only are we solving the problem fairly permanently, but we're not disrupting backyards with a lot of

reline when we see warning signs."

Eight staff members are involved in root control, and most attended formal training. Since then, training has been on the job or by informal mentorship. Fairfield uses RootX chemical treatments

longevity of the systems. "We have a 1987 truck that we use extensively, and it is still in very good shape," says Crouch. One ongoing goal is to inspect a high percentage of private laterals.

Most video footage is still stored on videotape, but the department is evolving. "We're running on digital now, so we can store footage on the server, but so far we're only digitizing problem areas due to memory issues," Crouch says. To index footage, TV inspection sheets are catalogued in the GBA Master Series system. If the desired footage falls in a problem area, users can link directly to a .mov file and see the pipe immediately.

Not in it for glory

Although Fairfield's wastewater management department has won the Ohio Water Environment Association's Golden Manhole award, the department does not usually seek awards or recognition. "We like to fly under the radar here," says Young. "It takes a lot of time to apply for awards, and we really like to be left alone to do our jobs."

Speaking of Crouch, Zimmerman and himself, Young says, "Between the three of us, we have 75 years' experience, and we really like doing our jobs."

Crouch adds, "We're lucky we have the money to do a good job here. The city council has always supported us. The council wants to make sure we're providing the same high-quality service 50 years from now, so we're working to keep everything in place for the future." ♦



Maintenance operator Kim Campbell, left, and collection laborer Chris Croucher disassemble equipment after applying a root treatment.

to look for products that foam with the addition of water. A quarterly newsletter includes articles relating to private lines, such as tips on reducing grease buildup. Other public outreach comes via annual attendance at a local home expo.

trenching or equipment. Plus, it's cost-effective. Twenty-eight dollars a foot for lining 8-inch pipe is pretty cheap compared to what we spent in the 1980s, and it usually makes sense for us to address root intrusion problems that way."

"We like to fly under the radar here. It takes a lot of time to apply for awards, and we really like to be left alone to do our jobs."

Drew Young

Lining the pipes

The city also addresses root issues with aggressive cured-in-place pipe lining, using hot water for curing. This work is let out to contractors using various technologies, but hot-water curing is stipulated because the city feels that the pressure creates better adhesion. "Once we've lined a pipe, it's a done deal, no more roots," says Young.

Young divides pipe into three tiers. Tier One is pipe that is often blocked and causes infiltration problems. "We've been doing this for a while, and I'd say that took care of most of our Tier One pipe," says Young. "Now we're on to Tier Two, which is pipe with leaks, pipe in high-water areas, or other red flags for infiltration problems. To us it makes sense to go ahead and

in-house, and has contracted with Duke's Root Control Inc. In-house work is done with a RootX foaming unit on a Vactor combination truck.

GBA Master Series Maintenance Management Software, linked to a GIS, is used to track and schedule root maintenance. Zimmerman notes, "We're also reactive. We still find roots and cut as needed, then maybe put that area on a list for annual maintenance."

Systematic inspection

As part of its proactive approach, Fairfield has been progressive in its use of CCTV equipment. "We had everything inspected by 1992, and now we're going back for another run," says Young.

"We have dedicated staff and two trucks. One of the trucks is equipped with a grouter. Eventually, we hope to cover the entire system every five years." The city uses standard panel vans from CUES Inc. with OZII cameras on mini-tractors. Crouch is happy with the

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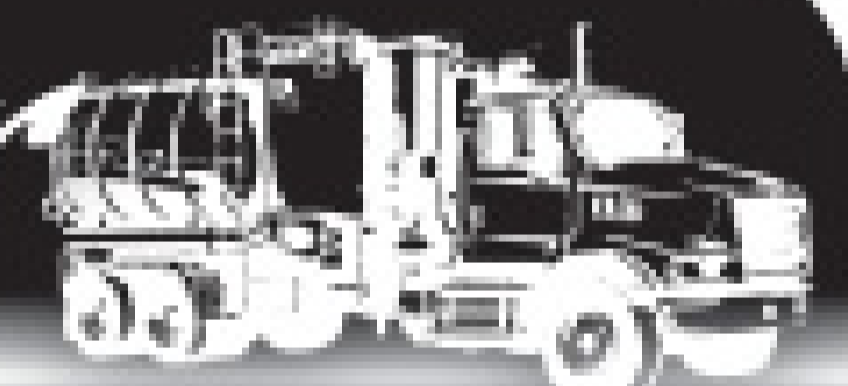
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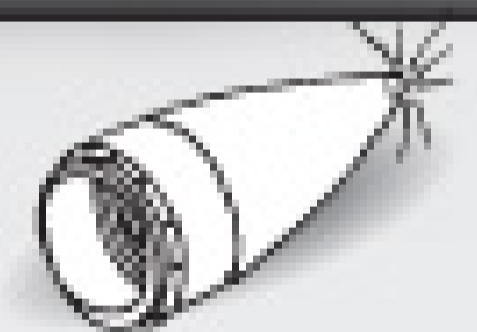
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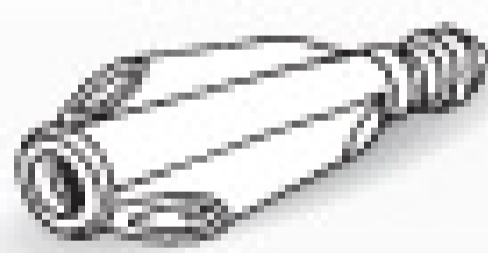
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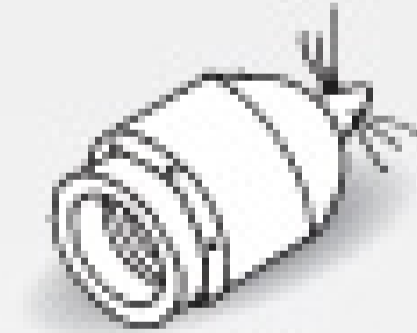
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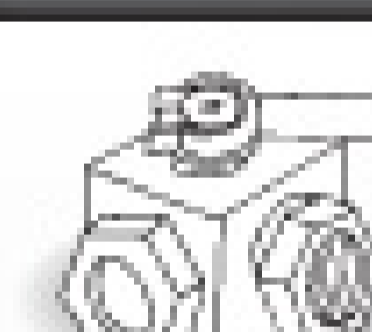
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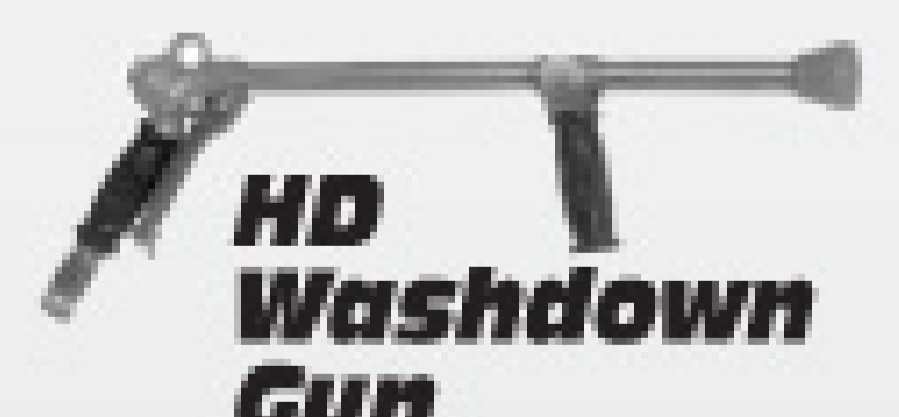
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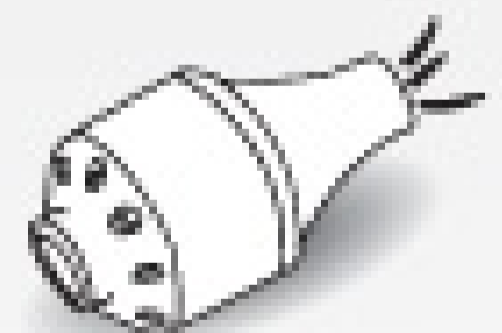
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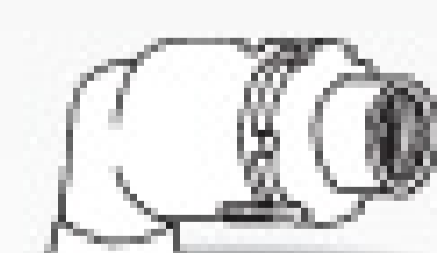
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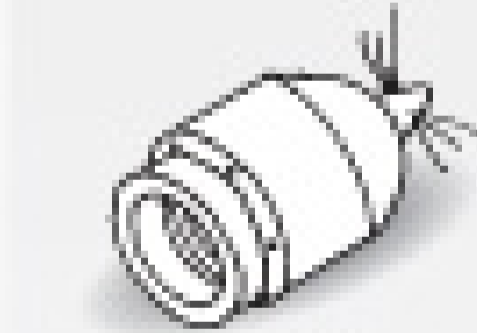
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Blair Township authority technician Rick Detwiler uses the P350 flexitrax system, including the P330+ flexiprobe unit, manufactured by Pearpoint Inc., to inspect mainlines up to 18 inches as well as sewer laterals. (Photos courtesy of Blair Township)

JUST RIGHT FOR THE JOB

A Pennsylvania township authority brings mainline and lateral inspection in-house using a flexible and portable camera system

By Ted J. Rulseh

The Blair Township Water and Sewer Authority sends wastewater to three area municipal treatment plants and is under a mandate from all of them to reduce inflow and infiltration by 10 percent from 2004 levels by the end of 2009.

Part of a successful I&I program is pipe inspection to identify

defects that need fixing. The township started by contracting for inspection services, but decided in 2008 to bring the inspection program in-house.

Authority manager Dennis Steward and technician Rick Detwiler now perform the inspections themselves, using a P350 flexitrax system manufactured by

Pearpoint Inc. The system gives them flexibility to inspect mainlines up to 18 inches (the largest in the 10-mile collection system) as well as sewer laterals.

Since they began using the system in fall 2008, Steward and Detwiler have inspected nearly 2 miles of mainlines. They are methodically building a complete



record of the sewer system on the township computer hard drive and plan to use more of the system's planning and reporting capability in the future.

Seeking flexibility

The Blair Township authority, about 100 miles east of Pittsburgh, serves about 2,200 sewer customers and 1,000 water customers. For about two years, the authority hired a contractor, who inspected about 3 miles of mains. Upon review, Steward determined that it would be more cost-effective to do the work in-house.

His criteria for picking a camera system were simple: He wanted one system that could handle all mainline and lateral inspections and that would be easy to use. Reliability was also important. "When we're planning to do inspections on a given day, we need the system to work," he says.

Steward looked at inspection systems in different configurations and sizes from several manufacturers before settling on the P350 flexitrac, a modular system that includes crawler-mounted, high-resolution cameras for mainlines and a high-resolution push camera for laterals. Both types operate

from the same control module.

The system includes a 6-inch steerable crawler with a pan-and-tilt camera along with elevators for inspecting larger pipes. It also includes a 4-inch non-steerable crawler for smaller mains, also with a pan-and-tilt camera. The crawler system includes 800 feet of cable and operates off of a small generator.

The lateral camera is a P330+ flexiprobe unit. It has 400 feet of push cable and 2-inch and 1-inch camera heads and runs on a 12-volt power pack.

Portable convenience

Steward and Detwiler operate the system from the back of a pickup truck. "We just flip it out and it's ready to go," says Steward. "If we have to, we can take it off the truck and wheel it behind houses.

"The one control module works with either the lateral or tractor cameras, and that makes our work easier. The connections between the module and the tractor and lateral cameras are extremely simple."

Color digital images display on an ultra-bright 8-inch industrial-grade TFT screen. The command module lets the Blair team zoom and rotate photos and view live or recorded digital video. "I can look

Color digital images display on an 8-inch industrial-grade TFT screen. The command module lets the Blair team zoom and rotate photos and view live or recorded digital video.

down a sewer, take a picture or a video, put it on a flash drive, download that into my computer, or use it to show our board members what we're doing," Steward says. "The picture quality is great.

"I don't have to carry a printer or DVD player into the field. I just take the flash card or camera card back to the office, download the information, and there it is."

Steward found the command module "self-explanatory." He and Detwiler can use a keyboard or voice recorder to note pipe defects and other observations.

Extra capability

"This was the right system for what we wanted to do," Steward

notes. He says that using it is like walking and chewing gum at the same time — it's that easy. In summer 2009, the Blair team is using the system to check out trouble spots and to continue a systemwide inspection program.

"It actually can do more than we really need at this time, but that's part of the reason we bought it," Steward says. "I bought it for the future also. Later on, we'll get into using it for different reports. We'll use the data to analyze whole areas of our system and mark areas where we need to do more repair work. We'll be able to look at the whole system, break it apart into sections, and set priorities for repairs." ♦

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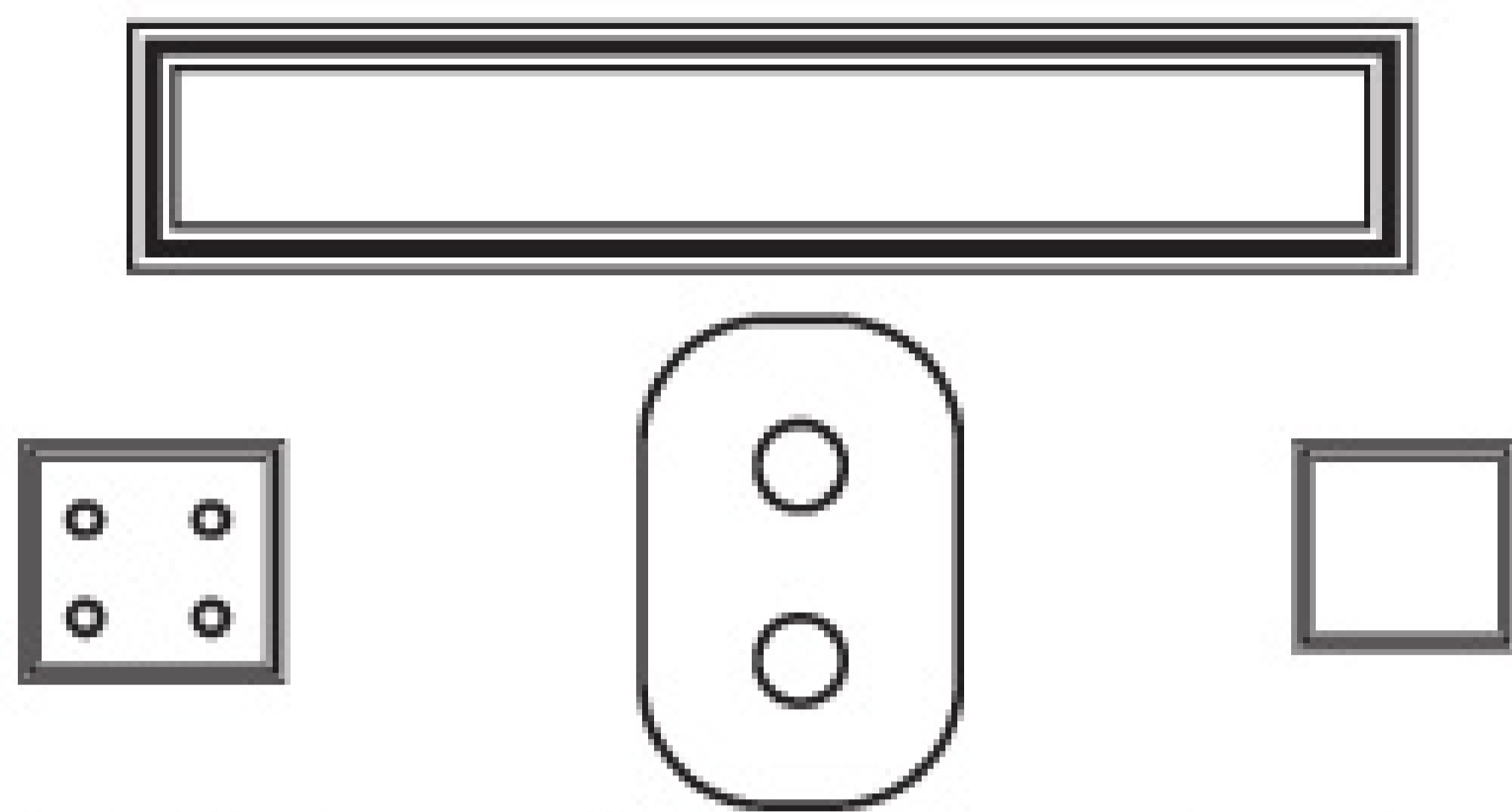
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INDUSTRY NEWS

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Pipe and Valve Technology's Training Center Opens

The 9,000-square-foot Pipe and Valve Technology Institute training center opened in Lake Zurich, Ill. The center is offering programs in pipe cutting and weld prep technologies, valve operation maintenance and vacuum excavation. The valve maintenance course is designed to provide training in the municipal water system industries, including field maintenance personnel. For more information, call 847/438-2623 or visit www.pvtinstitute.com. ♦

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GIVING VALVES A WORKOUT

A trailer-mounted valve-exercising system provides flexibility for essentially all valve sizes with full automation to simplify the process and collect complete data

By *Ted J. Rulseh*

Manual valve exercising is a time-consuming process, and one that poses risks of injury to employees and damage to valves.

Valve-exercising technology is designed to automate the process, so that employees do not subject

themselves to the strain of turning large or stuck valves, and so that only appropriate levels of torque are applied to valves. Automation has the added advantage of enabling easy collection of data for upload to GIS or asset management software in the office.

E.H. Wachs offers the VMT-1 valve maintenance trailer as a platform for transporting all valve maintenance and vacuum tools needed in the field. The City of Oconomowoc, Wis., a community of about 14,000 located 30 minutes west of Milwaukee, recently purchased a unit for its water department.

The city's trailer includes both the ERV-750 extended-reach exerciser, and the TM-7 heavy-duty exerciser for large or old, stubborn valves. Jason Bertrand, Midwest sales manager with E.H. Wachs,

Jason Bertrand of E.H. Wachs Co. uses a high-pressure wand to clean a valve box before exercising.



The City of Oconomowoc's VMT-1 valve maintenance trailer from E.H. Wachs Co. includes the ERV-750 extended-reach exerciser and the TM-7 heavy-duty exerciser. (Photography by Ted J. Rulseh)

TECHNOLOGY TEST DRIVE

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MANUFACTURER:

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www.wachsc.com

LOCATION OF DEMO:

Oconomowoc, Wis.

DEMONSTRATED BY:

Jason Bertrand, Midwest sales manager, E.H. Wachs

LIST PRICE:

\$60,000 as demonstrated

demonstrated the unit on May 4 outside the water department's headquarters.

Observing for the city were water operations superintendent Steve Roush, and six members of his staff: water foreman Andy Galasinski, water operators Kevin Jezak, Tony Stangler and Erik Voneiff, water operator/fleet manager Brian Friedl, and water operator/mechanic Dennis Stair.

Walk-around

Oconomowoc's valve-exercising system rides on a trailer rated at 7,000 pounds gross vehicle weight; actual weight is 4,200 pounds with water and debris tanks empty.

The ERV-750 exerciser extends up to 13 feet on a hinged arm and swivels roughly 270 degrees so as to reach and turn most valves from the curbside. It develops up to 750 foot-pounds of torque.

The TM-7 exerciser delivers up to 1,500 foot-pounds of torque (up

to 2,500 foot-pounds if mounted on a truck chassis). It slides out 27 inches from the stored position and also swivels about 270 degrees on a stainless steel rail.

Exercising with either unit is controlled by the same Recon control unit (manufactured by Trimble), which includes a keypad and touch screen. Each exerciser has its own docking station for the control unit, which acts as a data logger, GPS and microprocessor and controls the valve-exercising automation. The unit is hermetically sealed and highly water- and shock-resistant.

The unit also carries a vacuum system with a 500-cfm blower, a

2,500-psi/2.5-gpm pressure washer pump for hydroexcavation and cleaning of valve boxes, a 60-gallon water tank, and a 200-gallon debris tank. The tank has a sight glass on the side to indicate half-full; an auto-shutoff is triggered when the tank is full.

A control panel mounted on the trailer's left side directs all vacuum system functions. For dumping, the tank extends, tilts and opens hydraulically. The same panel includes switches for work lights and an arrow bar (eight lighting selections) for safety when operating in traffic.

The system includes a water hose reel and two jetting wands — a shorter one for pressure washing and a longer one for hydroexcavation and pressure cleaning of valve boxes. Another reel supplies hydraulic hose for connecting auxiliary tools, such as jackhammers, dewatering pumps and handheld saws. Everything is powered by a 27-hp Kohler gasoline engine with electric start.

A tool storage area on the trailer's lower level holds vacuum



Bertrand places a valve key into the TM-7 exerciser, which delivers up to 1,500 foot-pounds of torque for turning large or stubborn valves.

wands, a vacuum hose, valve keys and miscellaneous tools and supplies.

Operation

A city crew member used an equipment van to tow the trailer from the water department's parking lot to a valve box in the street

Exercising with either unit is controlled by the same Recon control unit (manufactured by Trimble), which includes a keypad and touch screen. Each exerciser has its own docking station for the control unit, which acts as a data logger, GPS and microprocessor and controls the valve-exercising automation.



Bertrand demonstrates the control module that regulates all valve-exercising functions and collects data for later upload to the city's computer system. The stylus is used to make entries on the touch screen.



Left photo: The control module display indicates turns and torque as the system operates the valve exerciser. Users press the start button and watch as torque and direction are controlled automatically. Right photo: Users can quickly view the attributes for valves and edit as needed. Field names and drop-down lists can be customized.



The city team observes the full reach of the ERV-750 system.

in front of the department offices. After a crew member removed the valve box lid, Bertrand started the engine, ran it at idle, connected the long pressure wand to the water hose, primed the system, engaged the engine, and aimed the wand into the valve box to loosen debris.

Bertrand then activated the vacuum from the control panel as Galasinski lowered a vacuum wand into the opening. Debris could be seen passing through the clear vacuum hose and into the tank.

Next, Bertrand connected an umbilical from the ERV-750 exerciser to the control unit and



A hydraulically driven system extends the debris tank from the trailer and tilts it for dumping. (Controls for this function are on the opposite side of the trailer.)

mounted the unit in its holder. He grasped a post on the unit's arm and pressed a green button on the post's top to release the dual disc brakes holding the arm in place. This enabled him to extend the arm with minimal effort to a position over the valve box.

He lowered a telescoping valve key into the opening and engaged the valve, then used a "jogging" function on the control unit to locate the exerciser directly over the key. He showed that with the green button released, the brakes held the arm in a rigid position. Finally, he connected the exerciser to the valve key.

Using a stylus on the control unit's touch screen, Bertrand entered basic data on the valve, then turned on the GPS function to record the valve's location. Setting the torque limit at 150 foot-pounds, he touched a start icon on the control to begin the exercising process.

"The system automatically determines if a valve's normal position is open or closed, and whether it turns right-hand or left-hand," Bertrand observes. It is programmed so that when it hits the preset torque limit, it stops and reverses two turns, then resumes. (The operator stepped up the torque limit in 50-foot-pound increments.

This gradual increase ensures that only the minimum necessary torque is applied.)

In a series of forward and reverse motions, the system exe-

"A crew should be able to move from valve to valve, open the boxes, clean out debris, put on a key, exercise all valves automatically, and gather pertinent information, which includes the number of turns and the torque each valve requires. They can go through a variety of fields and add as much or as little information as they need."

Jason Bertrand

cuted 19.9 turns, indicating a 6-inch valve. Using the control unit, Bertrand then instructed the system to reverse direction and touched the start icon. The system returned the valve to its normal operating position.

Bertrand used fields on the control unit screen to enter information about the test: condition (good), size (6-inch), depth (6 feet), normal position (open), turn direction (right-hand), and other data. He showed a space on the screen for use in recording remarks, such as defects, and difficulty in locating. He then displayed an on-screen torque chart showing the test results (charts also can be printed).

With the test complete, Bertrand stored the ERV-750 exerciser. A city crew member then repositioned the trailer with the TM-7 exerciser beside the valve box. Bertrand loosened a pair of handles, pulled the exerciser out to a position directly above the valve box, and showed how to deploy and engage the valve key. (A demonstration of the automated exercising process was not necessary because the basic functions are the same as for the ERV-750.)

Bertrand concluded the demonstration by accompanying the crew into the water department office and showing them how the control unit uploads all data into the computer system by way of a USB connection. Data from the control

unit is compatible with all recognized brands of GIS and infrastructure management software.

Observer comments

The VMT-1 system with both exercisers appears to offer a complete package for routine valve exercising. Water operations superintendent Roush notes that the unit replaces a manual exercising program that includes some valves more than 100 years old.

"It's certainly going to improve our operational safety and our productivity in the field," he says. The vacuum system will prove far superior in cleaning valve boxes than the portable wet-dry vacuums the

crew had been using, he observes.

The automated system allows crew members to exercise valves in a hands-off mode and avoid the risk of back and shoulder injuries that can go with turning stubborn valves. The entire system functions with minimal physical effort on the part of users.

The control unit carried considerable power in a small package. Some sort of sun shield over the docking station might be a useful addition or accessory, as under the cloudy-bright conditions of the demonstration, the screen was difficult to see except from directly in front. The unit does have a screen brightness adjustment for this purpose.

Manufacturer comments

Bertrand notes that the valve-exercising system is designed to give municipal departments and utilities a single platform from which to perform all exercise functions.

"A crew should be able to move from valve to valve, open the boxes, clean out debris, put on a key, exercise all valves automatically, and gather pertinent information, which includes the number of turns and the torque each valve requires. They can go through a variety of fields and add as much or as little information as they need. One technician can operate this system, although many cities send two people for traffic control and safety reasons."

He notes that E.H. Wachs fabricates essentially everything on the trailer at its own manufacturing facilities. This gives prospective users a great deal of flexibility to customize the system. ♦

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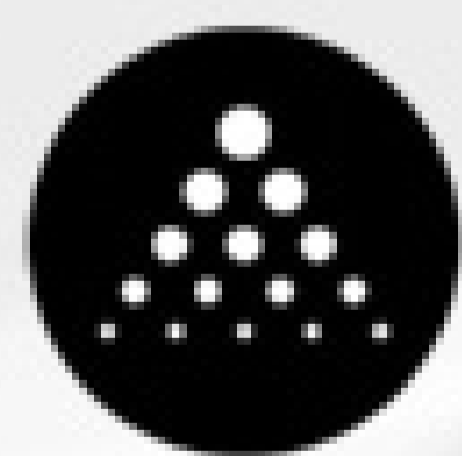
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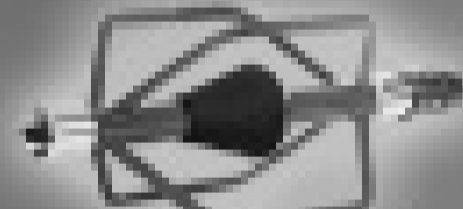
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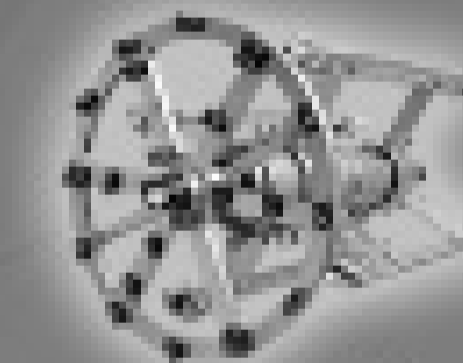
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LOOKING AT LATERALS

NASSCO adds the Lateral Assessment and Certification Program to its lineup of tools for evaluating, coding and managing infrastructure

By Irvin Gemora

No program has done more to help our industry improve consistency and communication in rehabilitations than NASSCO's Pipeline Assessment and Certification Program (PACP). Launched in 2002, and a North American industry standard since then, PACP standardizes the way sewer pipes are evaluated, coded and managed.

Today with more than 8,000 people trained and more than 200 municipalities embracing PACP, our industry has a comprehensive and reliable reservoir of data to use to prioritize and plan the renovation of wastewater collection systems.

NASSCO later introduced the Manhole Assessment and Certification Program (MACP) with great success. And, we are adding the

third and final link in the collection system — laterals. The Lateral Assessment and Certification Program (LACP) is based on the defect codes within PACP. While many defects found in laterals are similar or identical to those found in mains, some variations do exist. It's vital that our industry has a consistent method for identifying and coding defects in all three areas of the collection system.

With regard to laterals, our industry must understand certain basics. Regardless of the lateral size (typically 4 or 6 inches) the defects found in laterals are the same found in mains and are coded the same as in PACP. But several codes



specific to laterals have been added. The new codes deal with fittings such as wyes, bends, cleanouts and more. Here are some inspection conditions that may be encountered:

- Single-line inspection from the mainline to a cleanout or other access point (most common).
- Single-line inspection from the cleanout or other access point to the mainline (also common).
- Single-line inspection from the mainline to a side connection, then multiple side-line inspections to a cleanout or other access point (specific

to certain parts of the country).

- Multiple-line inspections from a number of cleanouts to a side connection, then a single line to the mainline (specific to certain parts of the country).

Typical LACP applications may include condition assessment of high-consequence areas (critical

The Lateral Assessment and Certification Program (LACP) is based on the defect codes within PACP. While many defects found in laterals are similar or identical to those found in mains, some variations do exist. It's vital that our industry has a consistent method for identifying and coding defects in all three areas of the collection system.

laterals), condition-based preventive maintenance and re-inspection, pipeline deterioration analysis, and pipeline condition mapping.

Software vendors are now being certified for LACP to help with effective data entry for lateral assessment now and in the future. In addition, NASSCO is revising and improving the MACP to make it more user-friendly. These changes will be announced in the near future. ♦

Irvin Gemora is executive director of NASSCO. He can be reached at director@nassco.org. The NASSCO headquarters is at 11521 Cronridge Dr., Suite J, Owings Mills, MD 21117.



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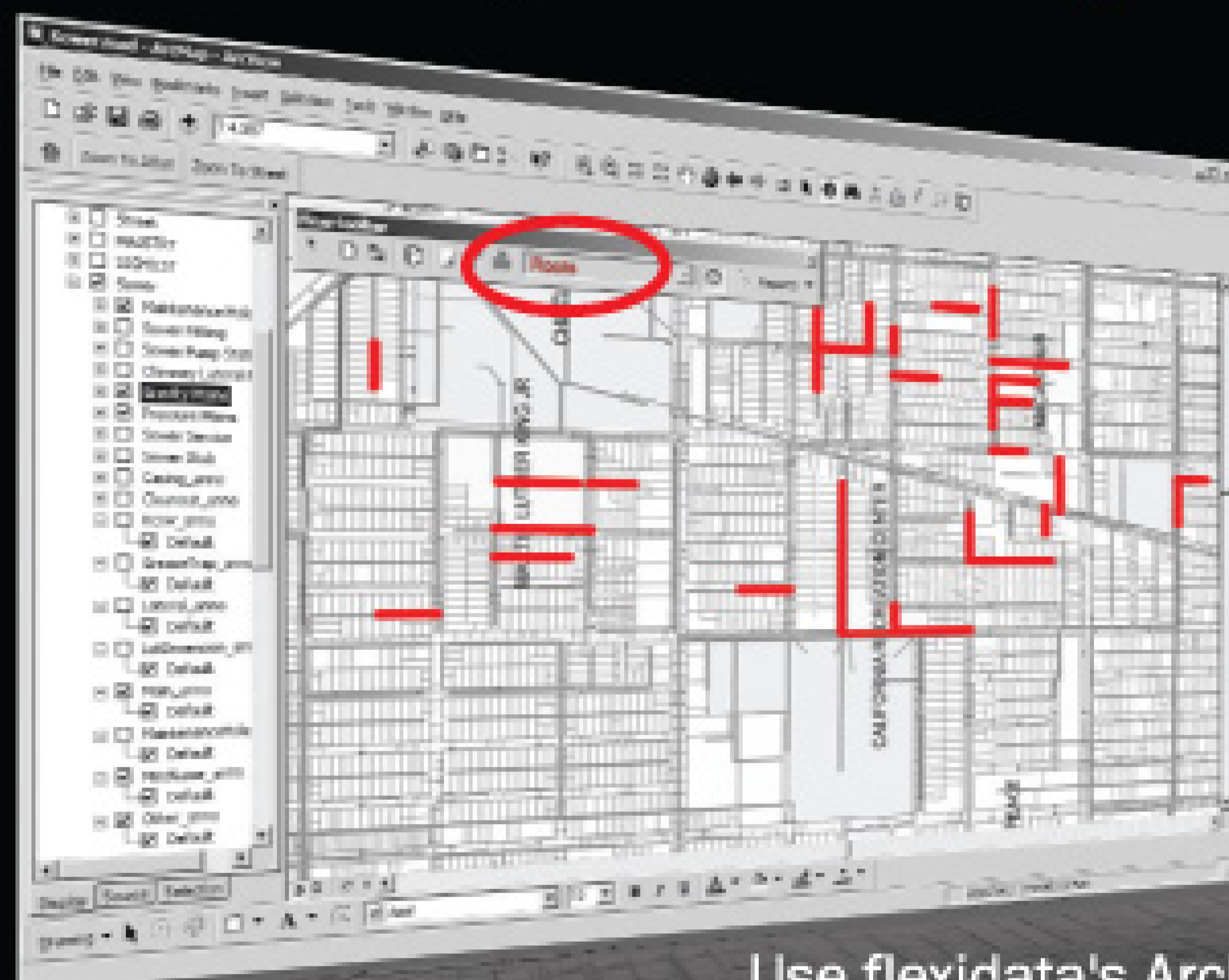
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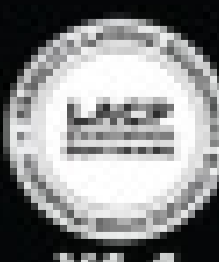
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MAKING IT COUNT

Charlotte-Mecklenburg Utilities gets big and consistent results from water conservation programs based on public education

By Ken Wysocky

Every drop counts. That's the message behind Charlotte-Mecklenburg (N.C.) Utilities' proactive, keep-it-simple community outreach program that is helping its 220,000 households get smart about saving water.

The utility decided in 2002 to raise customers' water conservation IQ through a WaterSmart program publicized on the Web site and through water bill inserts. It has brought about a 35 percent reduction in domestic water use since 2003, says Maeneen Klein, water conservation manager.

"In 2003, the average household use was about 7,800 gallons," Klein notes. "Now it's 5,100 gallons." But the 750,000 residents the utility serves benefit from more than just saving money and water. "Water conservation just makes good sense," says Klein. "Communities that adopt water efficiency as a lifestyle will continue to prosper and grow. Moreover, it's a shared resource. We have to ensure there's adequate water flow to our neighboring communities downstream (on the Catawba River)."

When Klein speaks at seminars and conferences, attendees often tell her afterward that their communities can't afford conservation programs. "I tell them they can't afford not to," she says. "It's the cheapest new water you can find. It's cheaper than building a new water plant, expanding an existing plant or finding new water sources."

Humble beginnings

One of the first WaterSmart initiatives was Liquid Assets, in which residents used a booklet or an online survey to audit their water use. It helped customers assess where they could save water by, for example, replacing old toilets, fixing dripping faucets and using low-flow fixtures.

Depending on the audit results, the utility might send customers items such as low-flow fixtures and leak-detection tablets, which use dye to determine if toilet flappers seal properly. Along with the audit tools, the utility started including on water bills a 13-month history of each household's consumption.

"We want customers to take ownership of their consumption patterns," Klein says. "The consumption history makes them aware of up-and-down usage trends that may signal leaks or other problems. Then they can be proactive about fixing those problems."

The vast majority of people resolve their own problems. But if asked, we'll visit in person if they can't get a fix on the problem."

In 2003, the program expanded to include a showerhead swap. "We swap 700 or 800 showerheads a year," Klein says. "Low-flow heads easily save 5 gallons per minute, so if someone takes a five-minute shower, that's 25 gallons per shower per person, which can really add up."

Tackling irrigation waste

When finances allow, the utility

plans to offer a \$150 water bill credit to any household that replaces an old toilet with a high-efficiency toilet approved by the U.S. EPA (one per household while supplies last).

The utility also plans an all-out campaign to reduce water used for irrigation through smart control technology. Both programs are on hold because water restrictions

We invite readers to offer ideas for this regular column, designed to help municipal and utility managers deal with day-to-day people issues like motivation, team building, recognition and interpersonal relationships. Feel free to share your secrets for building and maintaining a cohesive, productive team. Or ask a question about a specific issue on which you would like advice. Call editor Ted Rulseh at 800/257-7222, or e-mail editor@mswmag.com.

20 percent, or 100 million gallons."

Irrigation is prevalent in the South because keeping foliage and lawns healthy helps offset the effects of hot weather and adds to the quality of life, Klein notes.

"But we felt we needed to investigate the impact of irrigation on our system. We need to be proactive. We're not trying to eliminate

"We want customers to take ownership of their consumption patterns. The consumption history makes them aware of up-and-down usage trends that may signal leaks or other problems. Then they can be proactive about fixing those problems."

Maeneen Klein

over the last year and a half have reduced water revenues.

A 100-year drought in 2007 and 2008 that greatly increased irrigation use motivated the utility to look closely at watering of lawns and plants. The utility targeted commercial water users, including the top 100 irrigation users that account for 81 percent of all irrigation water used.

"Irrigation affects us tremendously," Klein says. "We looked at the top 100 irrigation users during a five-month period in spring and summer of 2007, and found they used 500 million gallons of water. That's 80 percent of all the water that flowed through irrigation meters. Smart control could have a significant impact, even at the low end of estimated savings, which is

irrigation, just make it more efficient, and mitigate its effect on our overall water system."

Satellite assistance

Smart controls for irrigation systems aim to do just that. Most in-ground irrigation systems have timers to water for specific periods. With smart controls, each sprinkler head is programmed according to what it waters: lawns, shrubs, flower gardens or vegetables. The programming also includes site-specific information, such as ground slopes, sun exposure and shade coverage.

Each day, the control box downloads pertinent weather data from a satellite, then waters each zone accordingly. "The system even monitors things like how

much water is lost through evaporation and the moisture content of the ground," Klein says.

"Based on all this information, the system on any given day might irrigate just the lawn, but not the shrubs, or water the grass two days in a row. Or if your backyard gets four hours of sun a day and the front yard gets eight hours, then the backyard will get less water and the front yard will get more."

Education is critical

To further educate customers, the utility operates the Blue Planet environmental education center, a hands-on place where children can learn the basics of the water cycle: where water comes from, how it's treated and distributed, and how wastewater is collected and treated. The utility Web site is full of information about simple ways to

save water. Residents are getting the message.

"We've established a track record of less usage since 2003," Klein says. "Whether or not we're in a drought, customers are receptive to conservation. The challenge going forward is to measure and benchmark what we do, so we can clearly show the program's impact on water supply planning. It's a critical tool for a well-run utility."

In general, Klein says, it's important for people to value water. Because it is relatively inexpensive, consumers often take it for granted, until water restrictions are imposed. That's where an educational program is valuable. "We need to show people how seriously we take the role of stewardship, but point out their responsibility to be smart water users," Klein says. ♦

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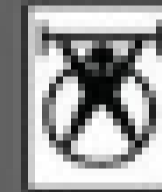
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Product Spotlight

Compact Gas-Detection Unit Simplifies Confined-Space Work

By Ken Wysocky

The GasAlertMax XT from BW Technologies/Honeywell International Inc. offers municipal workers a compact, lightweight, hand-held monitor with one-button operation for monitoring the levels of dangerous gases in sewer lines for confined-space entry. The water-resistant unit weighs 11.1 ounces and measures 5.1 by 2.8 by 2 inches. An easy-to-read LCD panel can display data in English, French, German, Spanish and Portuguese. It simultaneously displays the concentrations of oxygen (0 to 30.0 percent), carbon monoxide (0 to 1,000 ppm), hydrogen sulfide (0 to 200 ppm) and combustible gases (0 to 100 percent LEL and 0 to 5.0 percent v/v).

The data is displayed in real time, along with the units of measurement. The panel also displays icons that verify that the detector and pump are functioning and indicate the remaining life of the rechargeable battery, which can operate for 13 hours.

The unit warns operators of dangerous gas levels with an audible alarm, vibration and a visual cue. Alarm modes include low, high, time-weighted average, short-term exposure limit, and over limit. The alarm set points for all sensors can be adjusted for different applications. When the unit is turned on, it automatically self-tests the sensor, battery, circuit integrity and the audible and visual alarms.

An advantage of the device is an integrated sampling diaphragm pump that is easier to use than external pumps and promotes uniform, consistent airflow. SmartSample technology improves the accuracy of remote sampling.

"An integrated pump allows real-time sampling, and the instrument monitors the operation of the pump," says Billy Grewal, product marketing manager. "There's not a lot of training required. And if it's easier to operate, even if you're wearing gloves, there's a higher likelihood it will be used."

Other features include a built-in, concussion-proof boot to increase durability; tamper-proof field operation; simple auto-calibration; and standard data-logging and event-logging software. **For information, call 888/749-8878 or visit www.gasmonitors.com.**



GasAlertMax XT from BW Technologies/Honeywell International Inc.

LNR Offers A-Clamp Line Vent-Clamping System

The 4-inch A-Clamp sewer line vent-clamping system from LNR Industries is designed to reduce inflow and infiltration by securing riser/cleanout pipes to the discharge pipe or P trap, if one is used. The clamp features stainless steel hardware, rubberized coating and solid-steel construction. It can handle up to 1,500 pounds of force and takes about eight minutes to install. A tee clamp also is available. **716/778-6220; www.aclamp.com.**



CUES Releases Granite XP Scheduler Module 18

The Granite XP scheduler module from CUES Inc. enables users to schedule the transfer of CCTV data and media files and perform database synchronization automatically at specific times set by the administrator. On a daily basis, supervisors can get their completed inspections and CCTV crews can find their incomplete inspections waiting for them. **800/327-7791; www.cuesinc.com.**

Electric Eel Introduces EC-8SD Inspection System 183

The EC-8SD camera inspection system from Electric Eel Manufacturing Co. Inc. features a digital recorder that transfers inspection video directly onto a secure digital flash card. The control unit is housed in a 10.4-pound carrying case and includes controls for microphone, lights, camera test port and secondary video and audio outputs. Date, distance and time are displayed on the screen. A keyboard for adding text is included. A 1.3-inch diameter color camera with 512 sonde is standard, along with 200 feet of Gel Rod push cable. **800/833-1212; www.electriceel.com.**



Lowell Scott Offers Third-Generation TrunkPump 446

The TP-4PTR third-generation 4-inch Trunk Pump from Lowell Scott Enterprises Inc. can move more than 500 gpm. Designed for high-volume water transfer and evacuation, the pump can handle up to 2-inch solids. **910/463-1282; www.trunkpump.com.** ♦

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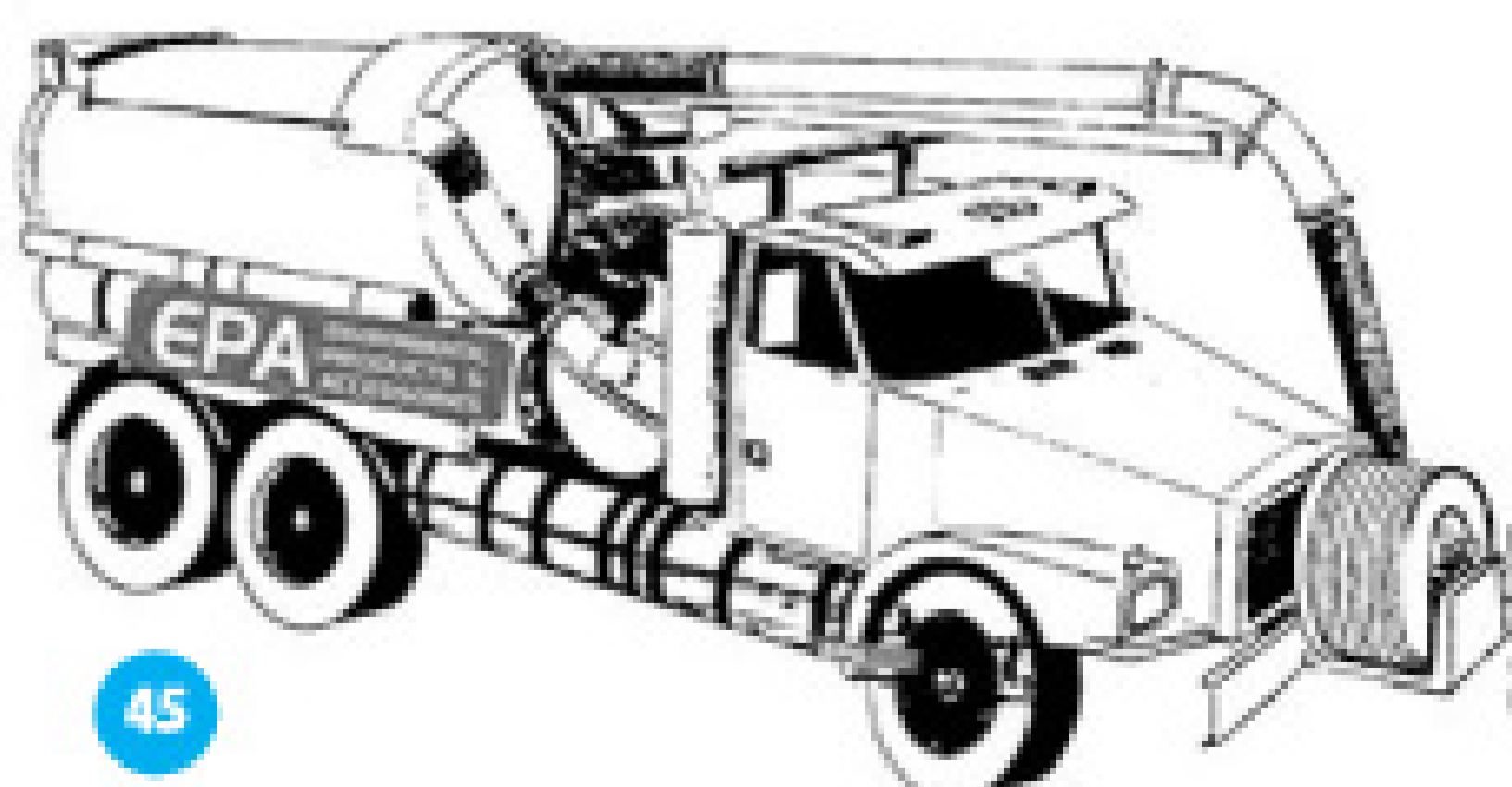
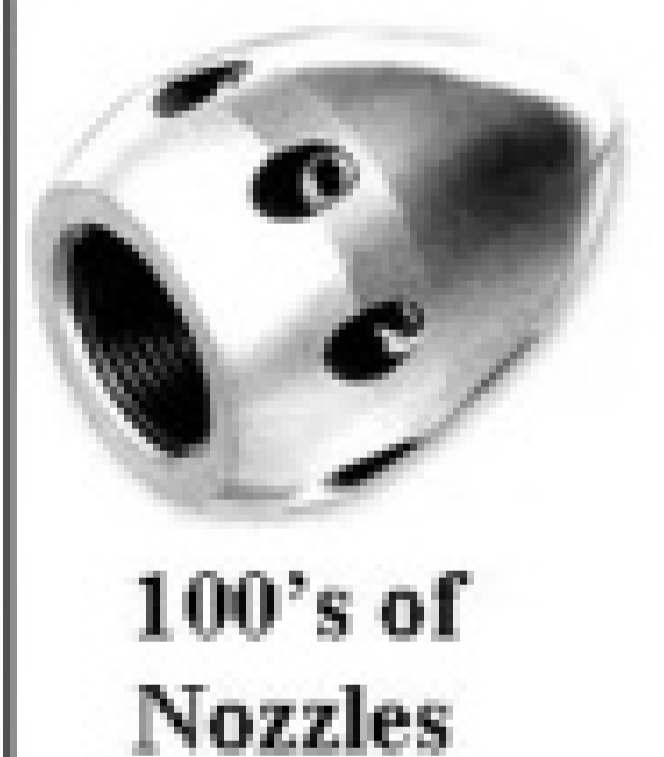
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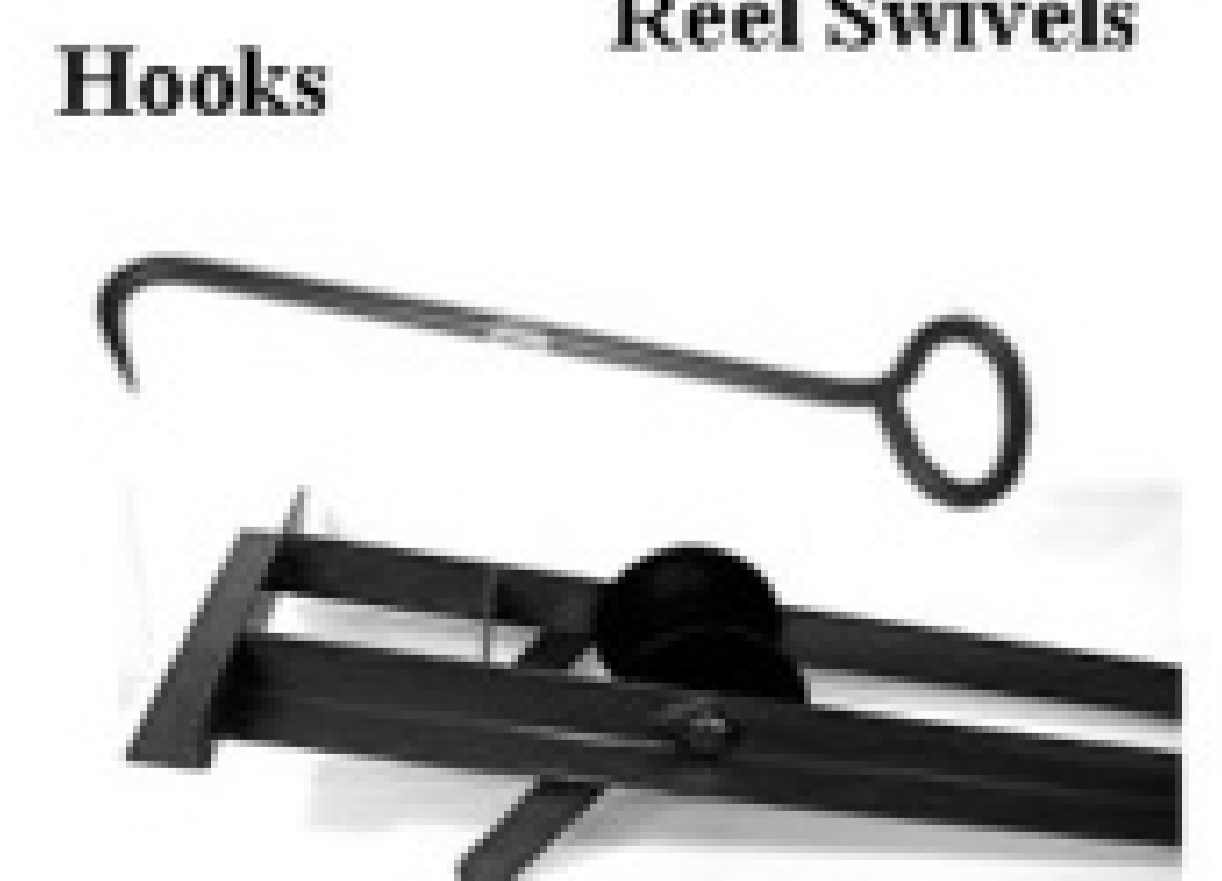
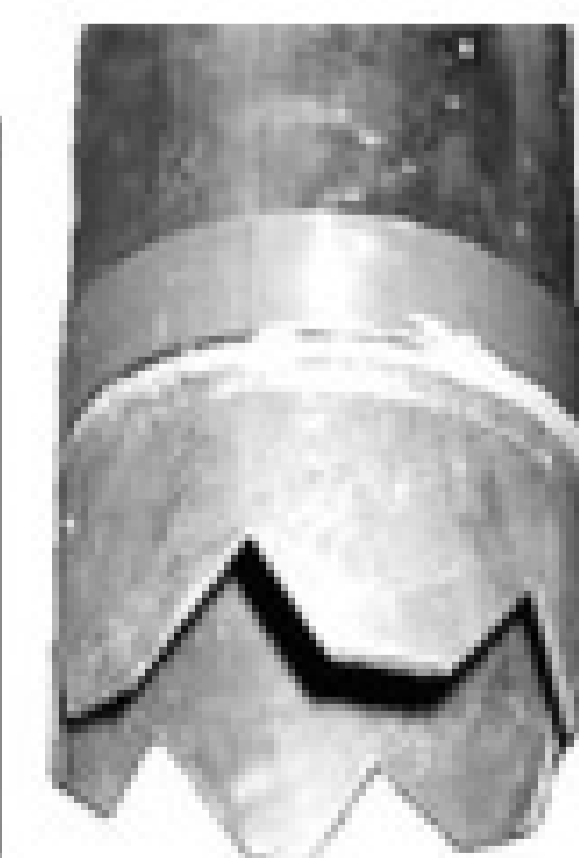
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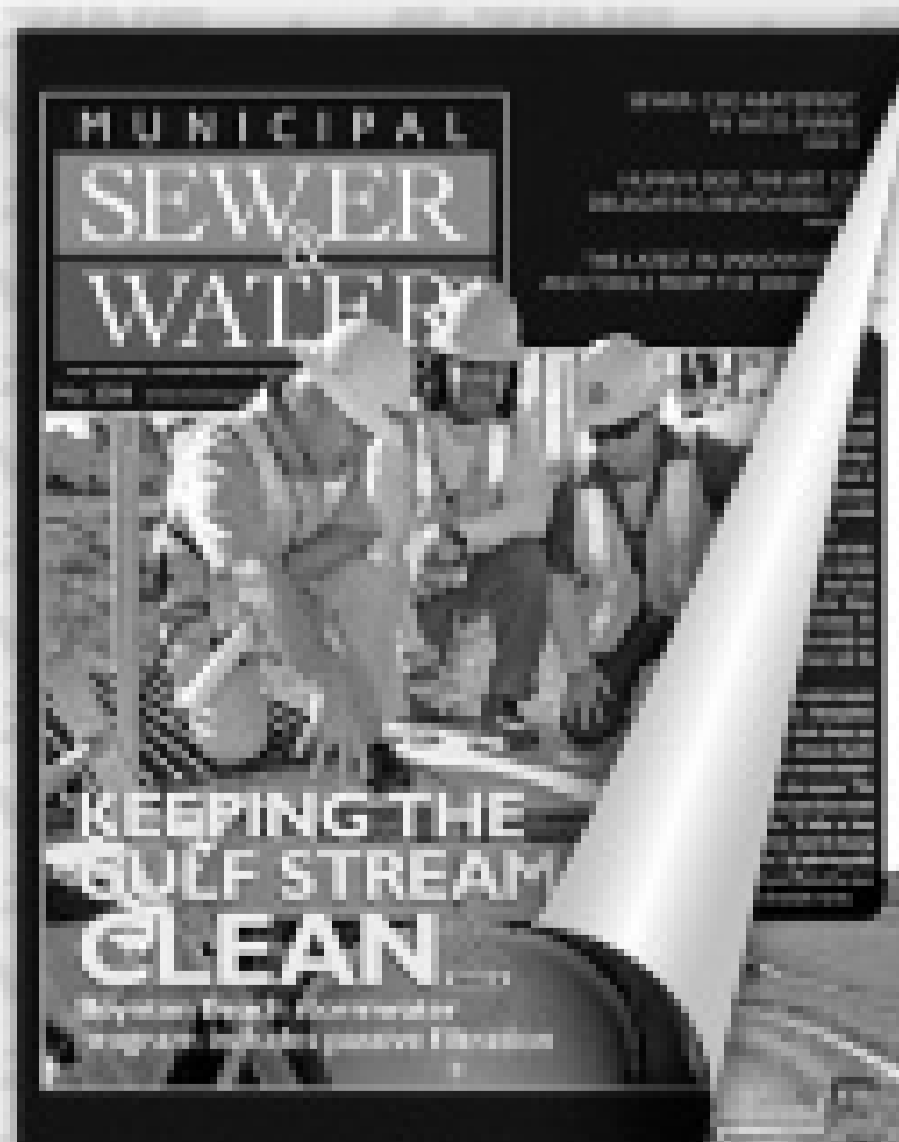
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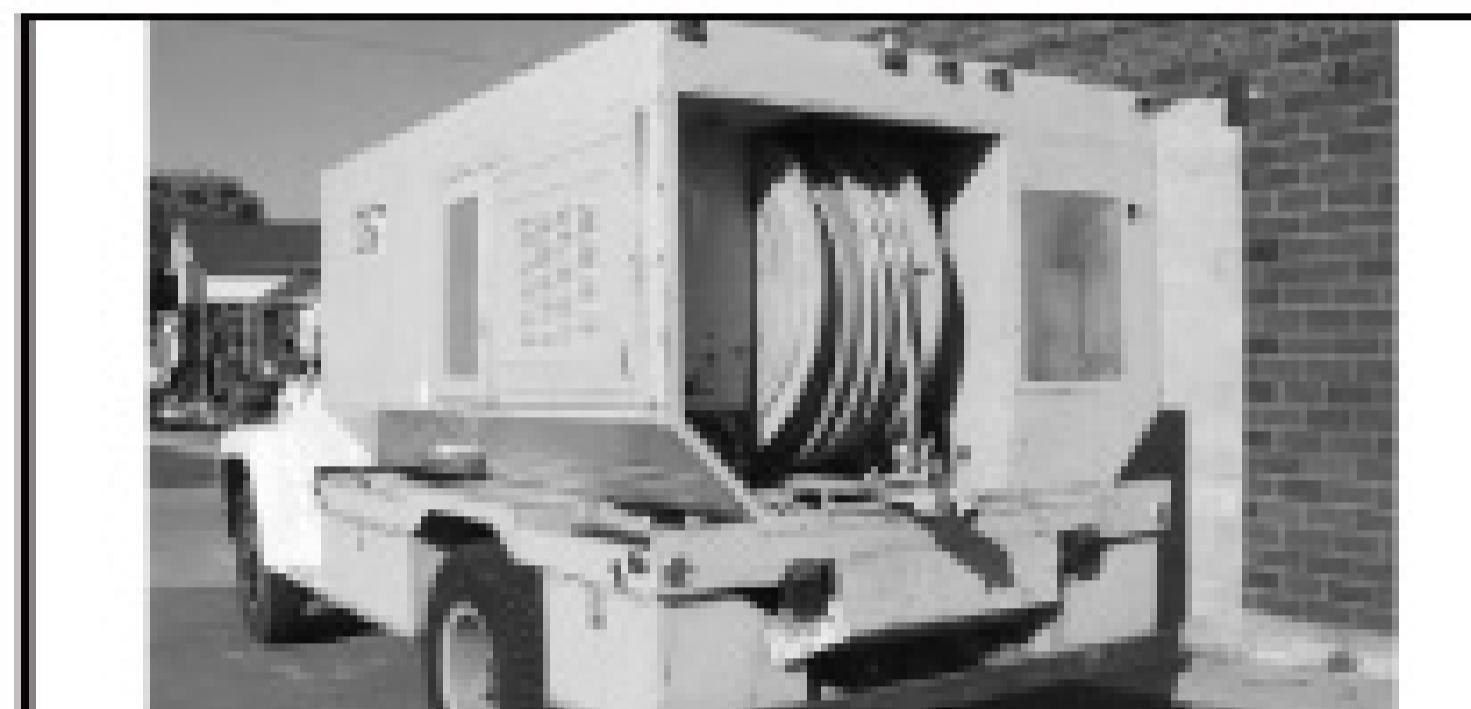
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(2) 2008 International 7600s cab & chassis, with a Guzzler Ace model 4118TC 18-yard debris body, 4100 cfm wet/dry industrial vacuum loaders. (Stock #4400 & 4401) www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648). (M8)

VacCon Industrial Vac, '93 Ford AeroMax 9000, Cat diesel, 66,000 GVW, Model 5016R, wet/dry bag house, Roots 4786 CFM blower, 16-yd. box. \$80,000. 717-697-6483. (C8)

1999 International with a Guzzler Ace 16" HG wet/dry industrial vacuum tank loader. **In stock. Available for purchase or rental.** (Stock #7390) www.VacuumSalesInc.com, (888) VAC-UNIT (822-8648). (M8)

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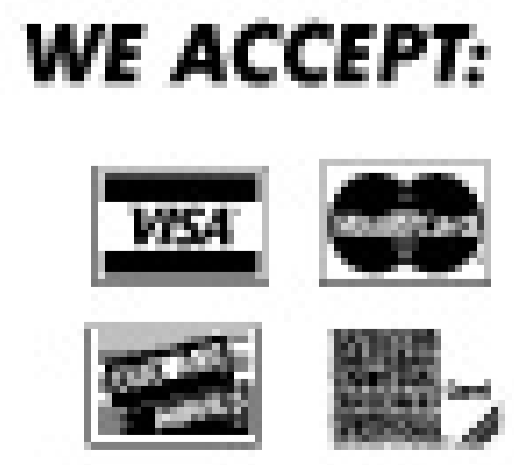
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PEOPLE / AWARDS

American Water received the Water Company of the Year Award from Global Water Intelligence.

Silicon Valley Water Conservation Awards were presented to: **Montara Water & Sanitary District** (Small Government Agency/Water Utility Award); **City of San Jose Environmental Services Department** (Large Government Agency/Water Utility Award); **Applied Materials** (Business Award); **L-3 Communications** (Electron Devices Division); **Kirsch Center for Environmental Studies** (Organization); **Stanford University** (Large Organization); **California Native Plant Society** (Education); **John Laird** (Individual); **ValleyCrest Landscape Maintenance** (Landscape Management); and **Redwood City** (Innovative).

Scott P. Hoff, Lydia A. Holmes, Lyle D. Munce and **David C. Sobek** have been named partners at Carollo Engineers, which specializes in water and wastewater engineering.

Lars E. Rosene, vice president of public affairs with Flowserve, has also been named chief sustainability officer for the company.

Peter J. Martin has joined MWH Soft, a global provider of environmental and water resources applications software, as Southwest Region client service manager.

John F. "Jack" Elliott was named president of Pure Technologies Inc. in addition to his title of chief operating officer. Pure Technologies provides information and communications technology for monitoring and assessment of critical infrastructure, such as water pipelines, containment structures and water reservoirs.

Tom Bass was named site leader for Dow Water Solutions in Edina, Minn.

Robert J. Card was named chief pipe engineer at Lockwood, Andrews & Newnam Inc. (Houston, Texas).

Lewis & Clark Regional Water System (Sioux Falls, S.D.), received the Partners in Conservation Award from U.S. Secretary of Interior Ken Salazar.

CALENDAR

Aug. 4-6

International Society of Automation Water/Wastewater Automatic Controls Division Symposium, Orlando, Fla. Visit www.wisa.org/wwac.

Aug. 9-12

Total Maximum Daily Load (TMDL) 2009: Combining Science and Management to Restore Impaired Waters, Hilton Minneapolis, Minneapolis, Minn. Call 703/684-2441 or visit www.wef.org.

Aug. 16-20

StormCon, the North American Surface Water Quality Conference and Exposition, Anaheim Marriott, Anaheim, Calif. Call 805/682-1300, ext. 129, or www.stormcon.com.

Aug. 26-29

Association of Water Technologies Annual Convention and Exposition, Hollywood, Fla. Visit www.awt.org.

Aug. 30-Sept. 2

American Water Works Association Distribution Systems Symposium and Exposition, Reno, Nev. Visit www.awwa.org.

Sept. 13-16

Water Environment Federation WaterReuse Symposium, Sheraton Seattle Hotel, Seattle, Wash. Visit www.wef.org.

Sept. 13-16

American Public Works Association Congress – The Best Show In Public Works, Columbus Convention Center, Columbus, Ohio. Call 816/595-5241 or visit www.apwa.net.

Sept. 20-23

National Rural Water Association Leadership Forum and Technology Exhibit, New Orleans, La. Call 580/252-0629 or visit www.nrwa.org.

LEARNING OPPORTUNITIES

American Society of Civil Engineers

ASCE is offering these courses:

- Aug. 4-5 – Pumping Systems Design for Civil Engineers, Radisson Hotel Hyannis, Hyannis, Mass. Call 508/771-1700.
- Aug. 13-14 – Storm Sewer Design Using SWMM, The Heathman Hotel, Portland, Ore. Call 503/790-7123.

For information, visit www.asce.org

American Water Works Association

AWWA is offering these Webcasts:

- Aug. 5 – Chemicals: Best Practices for Quality Assurance
 - Aug. 19 – Residuals Management and Disposal.
- Call 303/794-7711 or visit www.awwa.org. ♦

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